DCR-TRV12E/TRV14E/ TRV19/TRV19E

RMT-814

SERVICE MANUAL

Ver 1.0 2003. 02

Revision History

US Model
Canadian Model
Korea Model
DCR-TRV19
AEP Model
East European Model
North European Model
DCR-TRV12E/TRV14E/TRV19E
UK Model
DCR-TRV14E/TRV19E
E Model
Hong Kong Model
DCR-TRV19/TRV19E
Australian Model
Chinese Model
DCR-TRV19E

Z MECHANISM

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

- For MECHANISM ADJUSTMENTS, refer to the “DV MECHANICAL ADJUSTMENT MANUAL Ⅶ Z MECHANISM ” (9-876-210-11).

On the VC-311 board

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the VC-311 board.

Therefore, schematic diagram, printed wiring board, waveforms, mounted parts location and electrical parts list of the VC-311 board are not shown.

The following pages are not shown.

Mini DV Digital Video Cassette

DIGITAL VIDEO CAMERA RECORDER

SONY

COVER

Self Diagnosis Supported model Digital Handycam InfoLITHIUM M SERIES Cassette Memory MEMORY STICK

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits
(Fs 48 kHz, stereo)
Video signal
DCR-TRV19:
NTSC colour, EIA standards
DCR-TRV12E/TRV14E/TRV19E:
PAL colour, CCIR standards
Usable cassette
Mini DV cassette with the Mini DV mark printed
Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s
Recording/playback time (using cassette DVM60)
SP: 1 hour
LP: 1.5 hours
Fastforward/rewind time (using cassette DVM60)
Approx. 2 min. and 40 seconds
Viewfinder
Electric viewfinder
black and white
Image device
DCR-TRV12E/TRV14E/TRV19E:
4.5 mm (1/4 type)
CCD (Charge Coupled Device)
Gross:
DCR-TRV19:
Approx. 680 000 pixels
DCR-TRV12E/TRV14E/TRV19E:
Effective (moving):
DCR-TRV19: Approx. 340 000 pixels
DCR-TRV12E/TRV14E/TRV19E:
Lens
Carl Zeiss Vario-Sonnar
Combined power zoom lens
Filter diameter: 30 mm
(1 3/16 in)
10× (Optical), 120× (Digital)
Focal length
3.3 – 33 mm (5/32 – 1 5/16 in.)[1)]
42 – 420 mm (1 11/16 – 16 5/8 in.)[2)]
[1)] When converted to a 35 mm still camera
[2)] In CAMERA mode
Colour temperature
Auto, HOLD, INDOOR (3 200 K), OUTDOOR (5 800 K)
Minimum illumination
5 lx (lux) (F1.7)
0 lx (lux) (in the NightShot mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

S video output
4-pin mini DIN
(DCR-TRV19/TRV19E only)
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal:
DCR-TRV19:
0.286 Vp-p
DCR-TRV12E/TRV14E/TRV19E:
0.3 Vp-p
75 Ω (ohms), unbalanced
Audio/Video output
AV MINI JACK, 1 Vp-p, 75 Ω (ohms), unbalanced
327 mV, (at output impedance more than 47 kΩ (kilohms))
Output impedance with less than 2.2 kΩ (kilohms)/Stereo minijack (ø 3.5 mm)
Input impedance more than 47 kΩ (kilohms)
DV input (DCR-TRV19/TRV19E only)**/output**
4-pin connector
Headphone jack
Stereo minijack (ø 3.5 mm)
LANC jack
Stereo mini-minijack (ø 2.5 mm)
USB jack
mini-B
MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kΩ (kilohms)
(ø 3.5 mm)
Stereo type

LCD screen

Picture
6.2 cm (2.5 type)
50.3 × 37.4 mm (2 × 1 1/2 in.)
Total dot number
123 200 (560 × 220)

General

Power requirements
7.2 V (battery pack)
8.4 V (AC Adaptor)
Average power consumption (when using the battery pack)
3.3 W[1)]
2.5 W[2)]
[1)] During camera recording using LCD
[2)] Viewfinder
Operating temperature
0°C to 40°C (32°F to 104°F)
Storage temperature
–20°C to + 60°C
(–4°F to + 140°F)
Dimensions (approx.)
71 × 90 × 112 mm
(2 7/8 × 3 5/8 × 4 1/2 in.) (w/h/d)
Mass (approx.)
Main unit only
520 g (1 lb 2 oz)
Including the rechargeable battery pack NP-FM30, cassette DVM60 and lens cap
610 g (1 lb 5 oz)
Supplied accessories
See page 3.

AC Adaptor AC-L15A/L15B

Power requirements
100 – 240 V AC, 50/60 Hz
Current consumption
0.35 – 0.18 A
Power consumption
18 W
Output voltage
DC OUT: 8.4 V, 1.5 A
Operating temperature
0°C to 40°C (32°F to 104°F)
Storage temperature
–20°C to + 60°C
(–4°F to + 140°F)
Dimensions (approx.)
56 × 31 × 100 mm
(2 1/4 × 1 1/4 × 4 in.) (w/h/d)
excluding projecting parts
Mass (approx.)
190 g (6.7 oz)
excluding power cord

Rechargeable battery pack NP-FM30

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
5.0 Wh (700 mAh)
Dimensions (approx.)
38.2 × 20.5 × 55.6 mm
(1 9/16 × 13/16 × 2 1/4 in.)
(w/h/d)
Mass (approx.)
65 g (2.3 oz)
Operating temperature
0°C to 40°C (32°F to 104°F)
Type
Lithium ion

Design and specifications are subject to change without notice.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

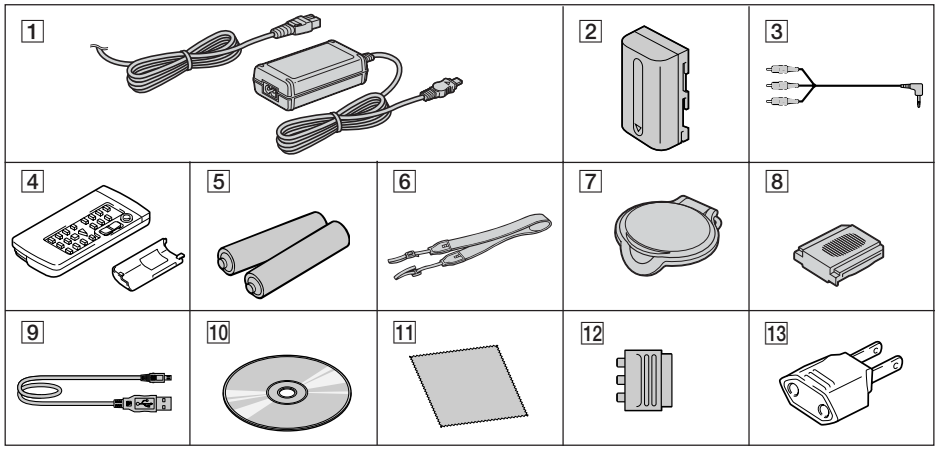
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

• SUPPLIED ACCESSORIES

Make sure that the following accessories are supplied with your camcorder.



1 **AC-L15A/L15B AC Adaptor** (1), **Power cord** (1)
2 **NP-FM30 rechargeable battery pack** (1)
3 **A/V connecting cable** (1)
4 **Wireless Remote Commander** (1) **RMT-814E (EXCEPT TRV12E)**
5 **R6 (size AA) battery for Remote Commander** (2)
6 **Shoulder strap** (1)
7 **Lens cap** (1)
8 **Shoe cover** (1)
9 **USB cable** (1)
10 **CD-ROM (USB Driver)** (1)
SPVD-010 (I), US, CND model only
SPVD-010 EXCEPT US, CND model only
11 **Cleaning cloth** (1)
12 **21-pin adaptor*** (1) (AEP, UK, EE, NE model only)
* The models with CE mark printed on their bottom surfaces only.
13 **2-pin conversion adaptor** (1) (E, HK only)

• Abbreviation
CND : Canadian model
EE : East European model
NE : North European model
HK : Hong Kong model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   • Keep the temperature of the soldering iron around 270˚C during repairing.
   • Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   • Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

• Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350°C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
• Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
• Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

TABLE OF CONTENTS

Shematic diagram of the VC-311 board are not shown.
Pages from 4-37 to 4-52 are not shown.

Printed wiring board of the VC-311 board are not shown.
Pages from 4-73 to 4-76 are not shown.

Waveforms of the VC-311 board are not shown.
Pages 4-79 and 4-80 are not shown.

Mounted parts location of the VC-311 board is not shown.
Page 4-83 is not shown.

Parts list of the VC-311 board are not shown.
Pages from 5-21 to 5-24 are not shown.

SECTION 1
SERVICE NOTE

1-1. SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

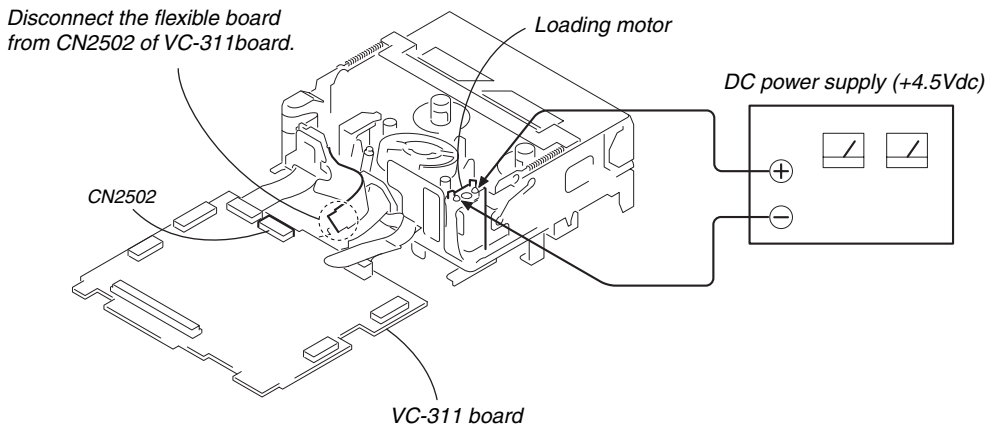
In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.
This following two methods are available to prevent this. Take note of which to use during repairs.

Method 1.
Use the AC power adaptor (AC-L10, AC-VQ800 etc.).

Method 2.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the commander switch to the “ADJ” side.

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-2 to remove the cabinet (R) cover (39E).
② Refer to 2-3 to remove the F panel section.
③ Refer to 2-10 to remove the BT panel/EVF section.
④ Refer to 2-14 to remove the VA-118 board and Lens section.
⑤ Refer to 2-16 to remove the VC-311 board and Mechanism deck.
⑥ Refer to 2-17 to remove the MD frame assembly from the VC-311 board and Mechanism deck.
⑦ Disconnect the flexible board from CN2502 of VC-311 board.
⑧ Supply +4.5V from the DC power supply to the loading motor and unload with a pressing the cassette compartment.



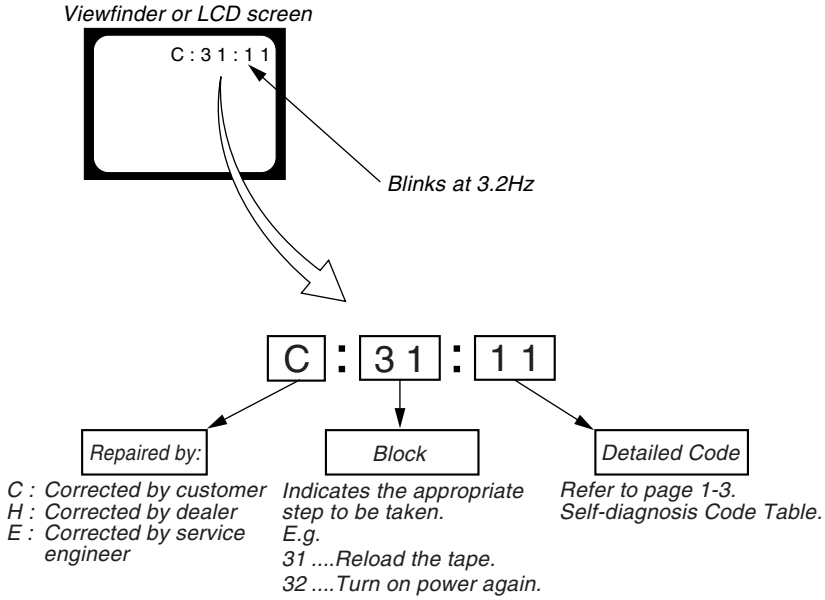
1-2. SELF-DIAGNOSIS FUNCTION

1. SELF-DIAGNOSIS FUNCTION

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder, or LCD screen what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. SELF-DIAGNOSIS DISPLAY

When problems occur while the unit is operating, the counter of the viewfinder or LCD screen consists of an alphabet and 4-digit number, which blinks at 3.2Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.



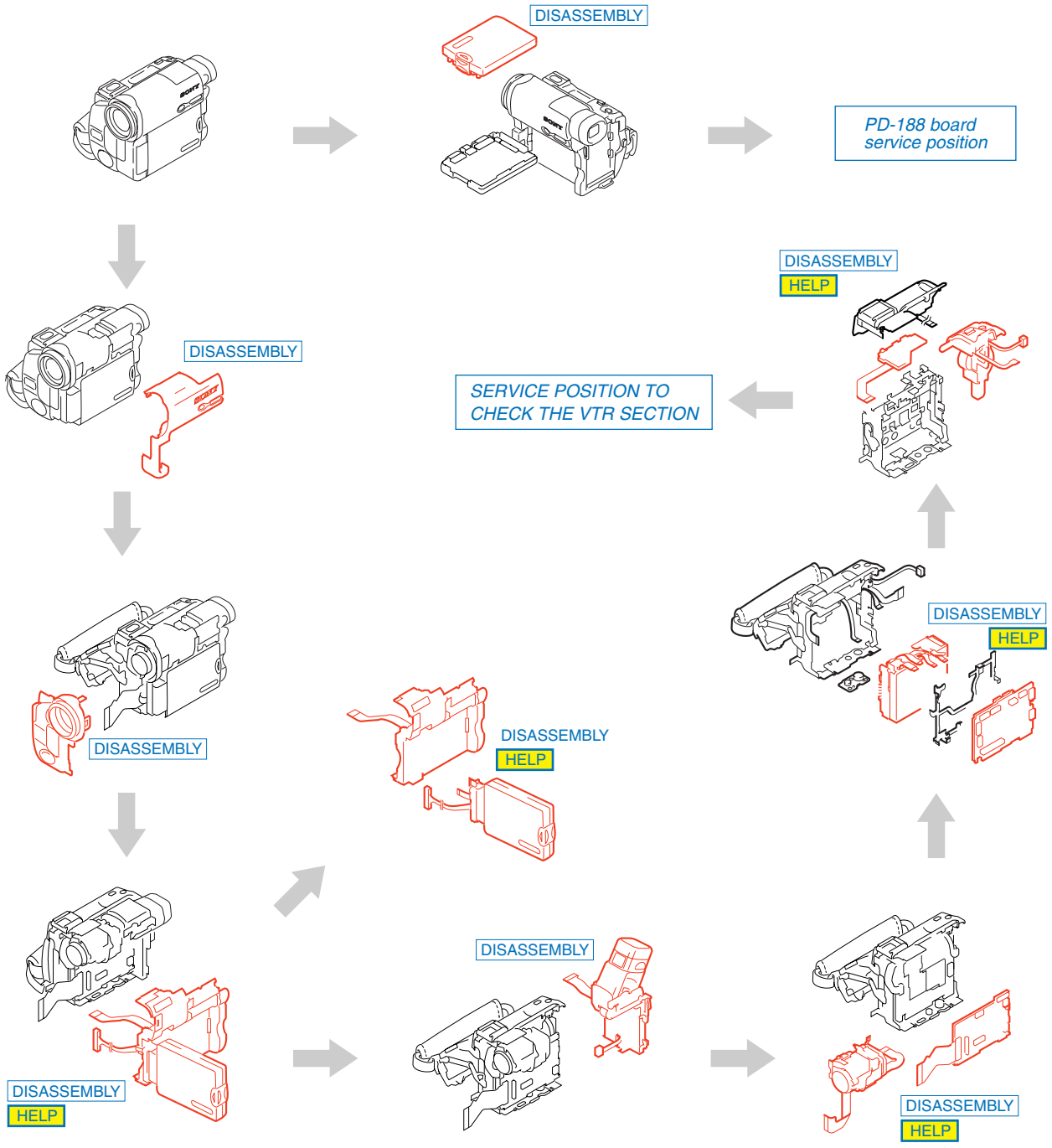
Note: The "self-diagnosis display" data will be kept even if the lithium battery (BT5201 of CK-129 board) is removed.

3. SELF-DIAGNOSIS CODE TABLE

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	0	4	0	0	Non-standard battery is used.	Use the info LITHIUM battery.
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	Winding S reel fault when counting the rest of tape.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	4	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	1	0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	Winding S reel fault when counting the rest of tape.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	4	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6	1	0	0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑦ of CN1201 of VC-311 board) when focusing is performed when the focus buttons of the touch panel are pressed in the focus manual mode, and the focus motor drive circuit (IC1201 of VC-311 board) when the focusing is not performed.
E	6	1	1	0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑯ of CN1201 of VC-311 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC1201 of VC-311 board) when zooming is not performed.
E	6	2	0	0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE5402 of MA-421 board) peripheral circuits.
E	6	2	0	1	Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE5401 of MA-421 board) peripheral circuits.

SECTION 2
DISASSEMBLY

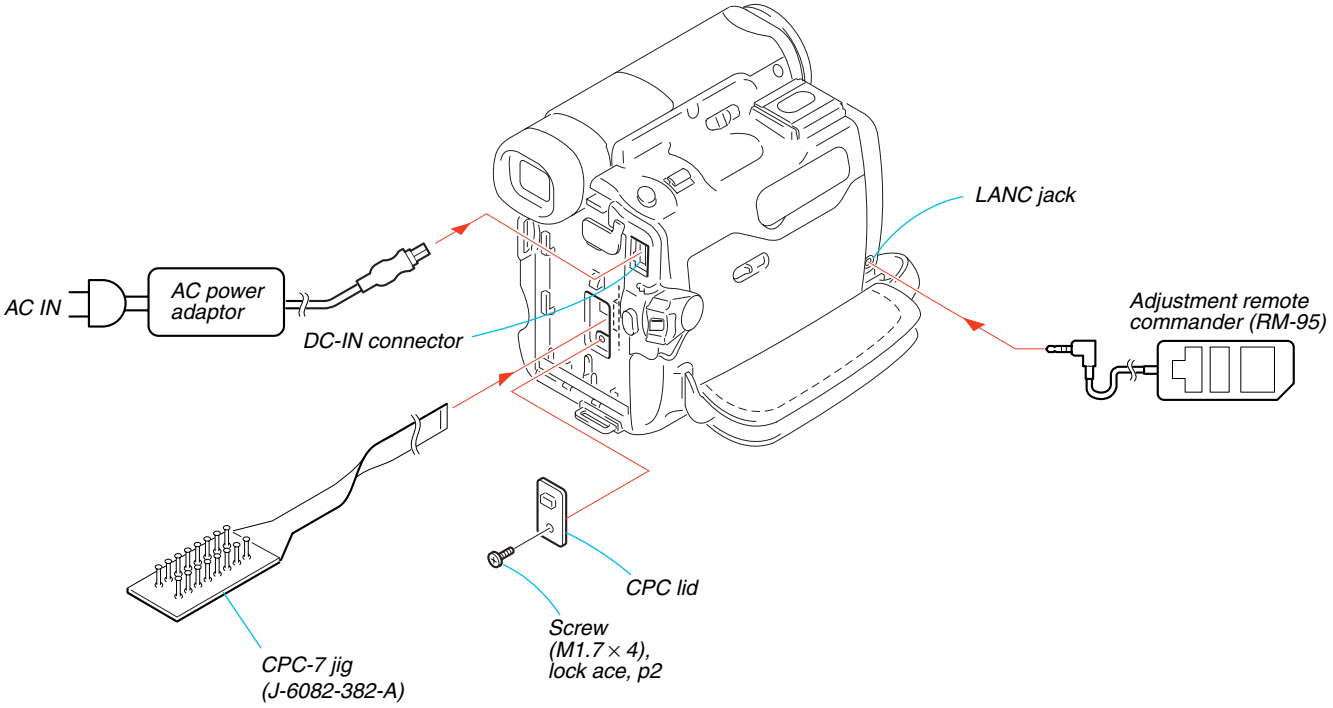
The following flow chart shows the disassembly procedure.



PROCEDURE OF REMOVING MECHANISM DECK

NOTE: Follow the disassembly procedure in the numerical order given.

[CONNECTION OF EQUIPMENT]

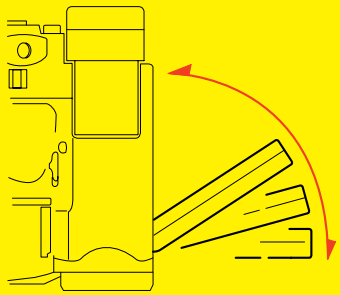


2-1. P CABINET (C) ASSEMBLY

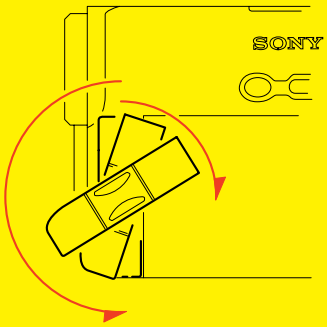
Caution

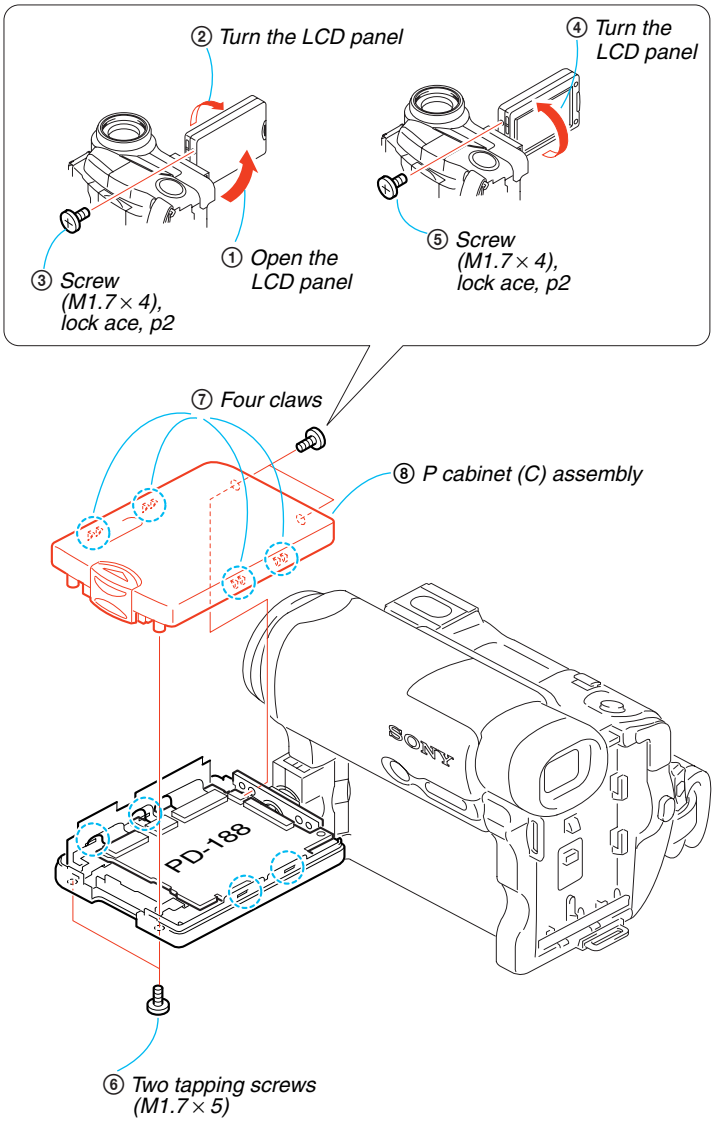
Rotation of the LCD panel has limitation due to its hinge in this model. Excessive force to rotate the LCD panel damages the hinge. Follow the precaution below.

Opening and closing of LCD panel must be performed only in the state that the LCD panel is completely in parallel (perpendicular) with the main body of the recorder.

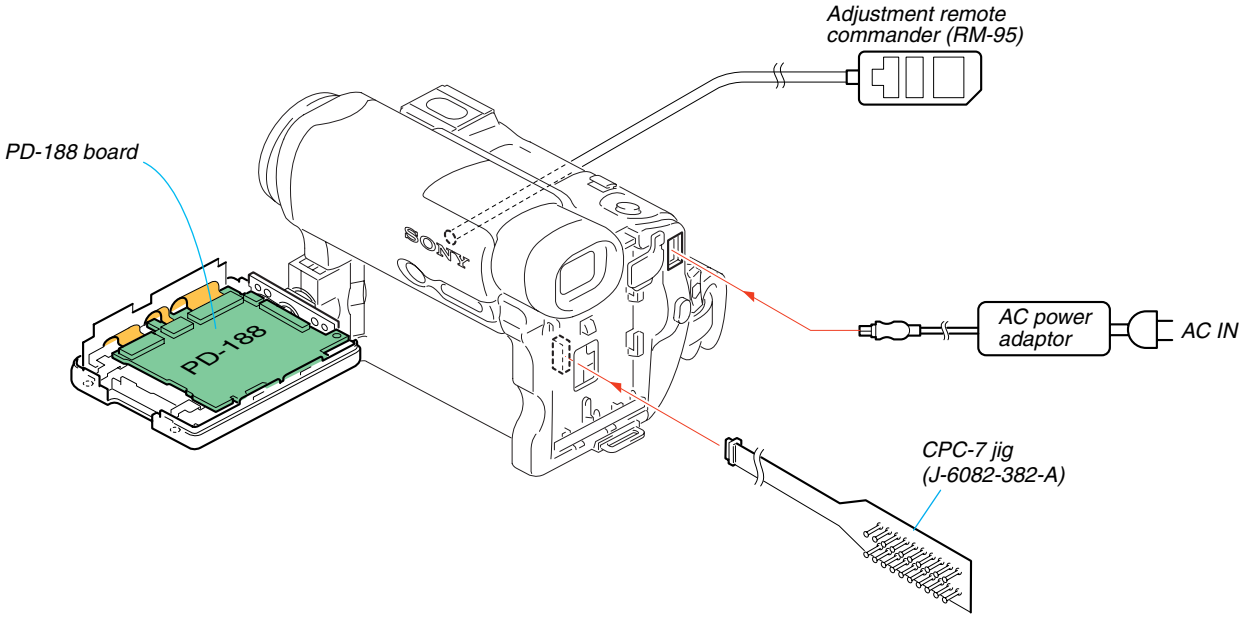


When you want to rotate the LCD panel, rotate it after the LCD panel is opened in its fully opened position.

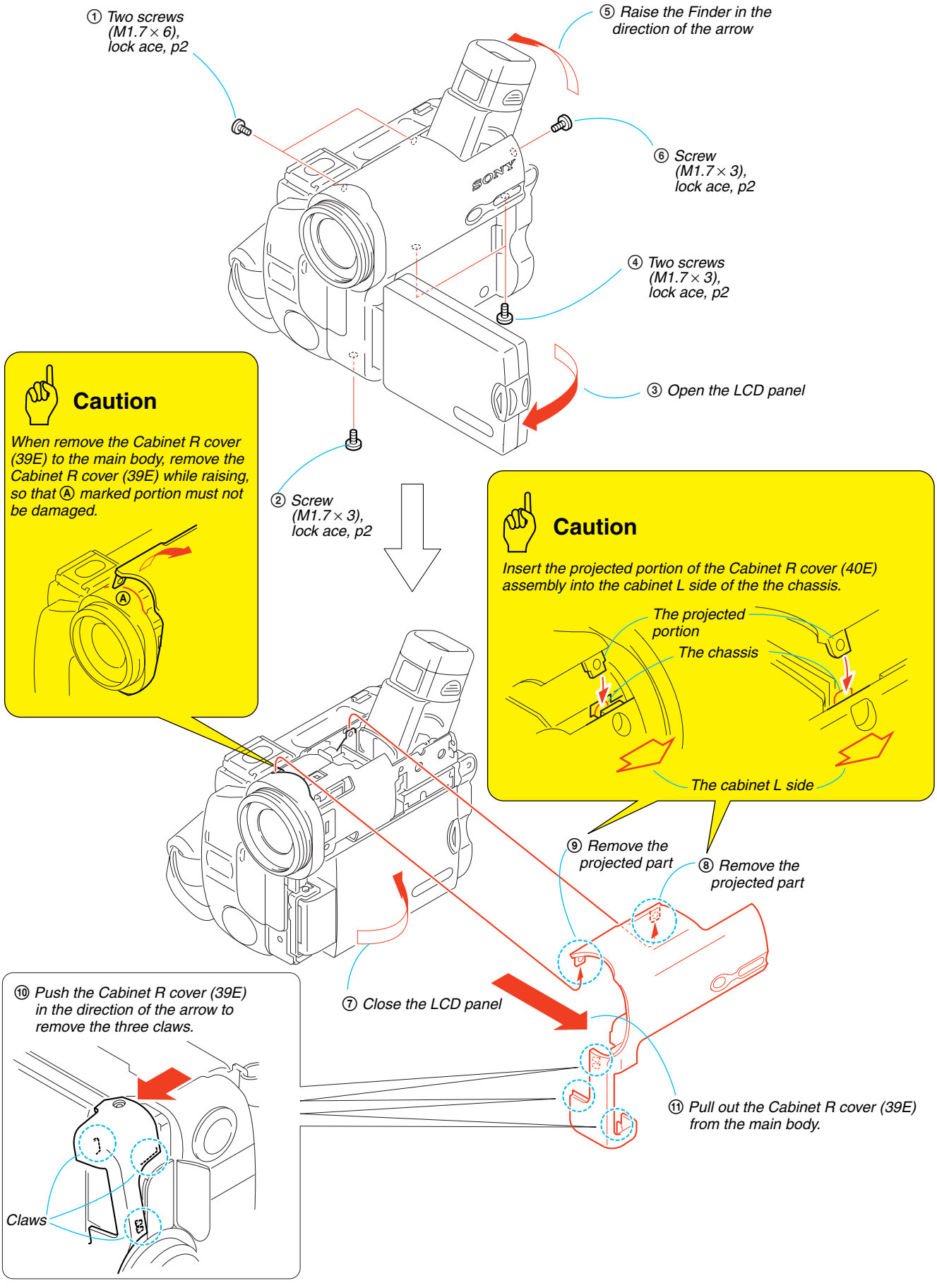




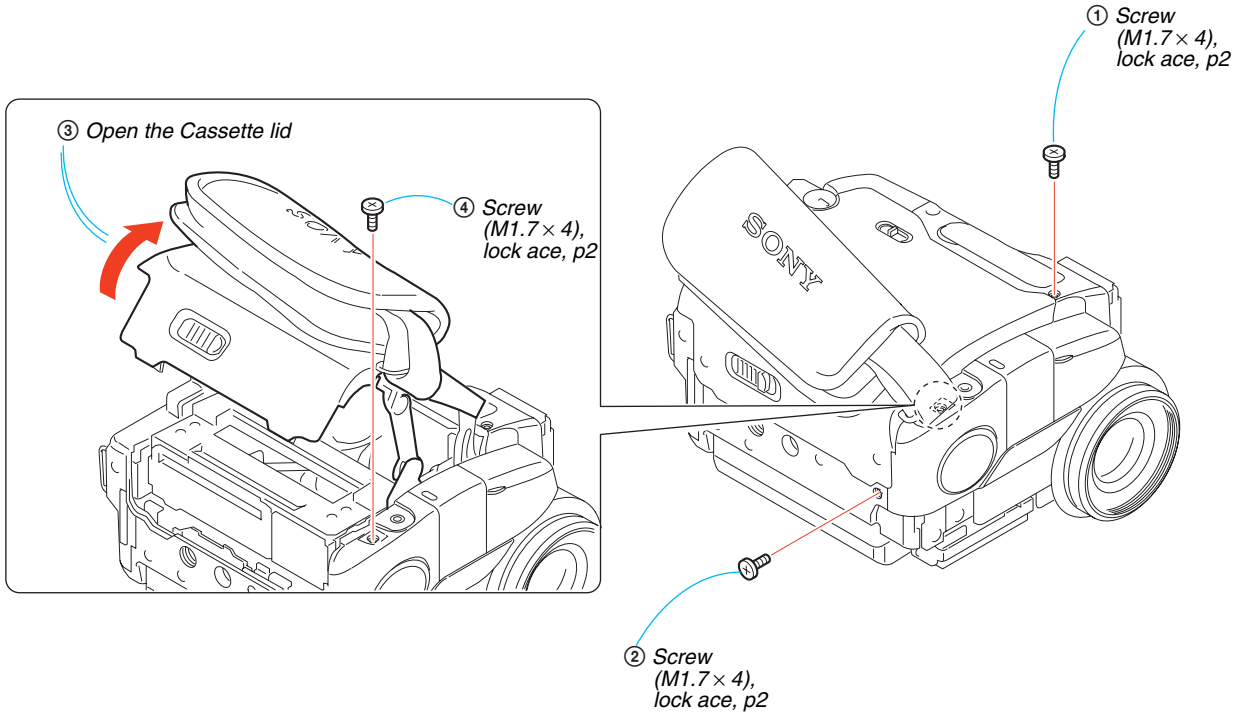
[PD-188 BOARD SERVICE POSITION]

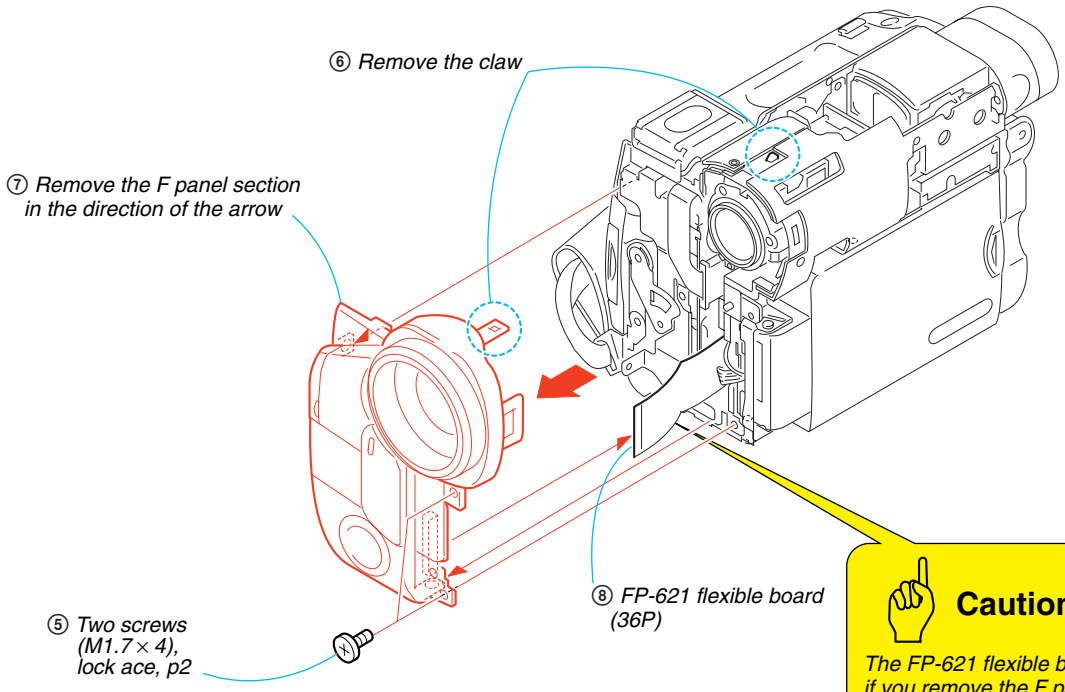


2-2. CABINET (R) COVER (39E) ASSEMBLY



2-3. F PANEL SECTION

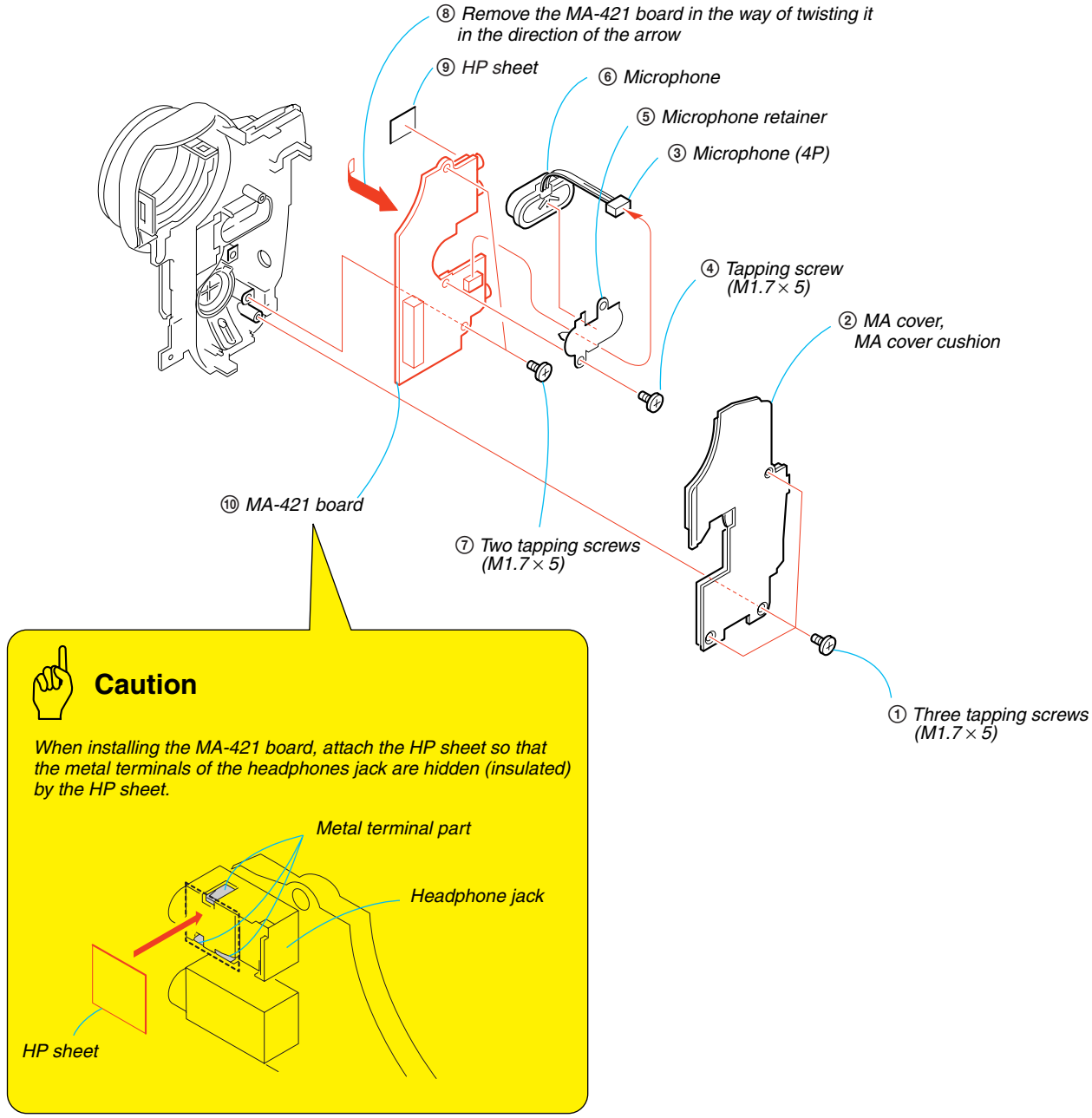




Caution

The FP-621 flexible board may be damaged if you remove the F panel section forcibly. Be very careful not to damage the flexible board.

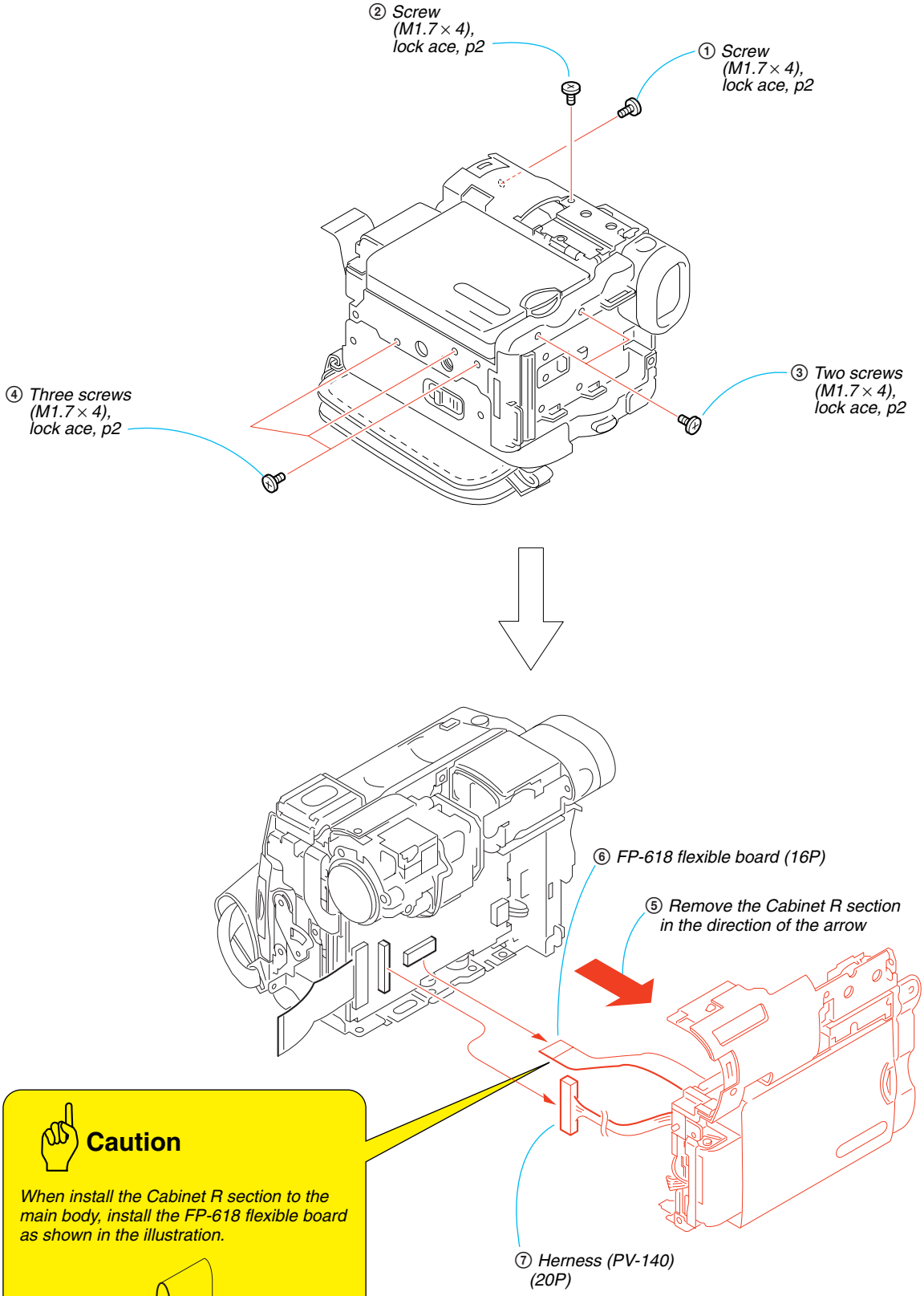
2-4. MA-421 BOARD



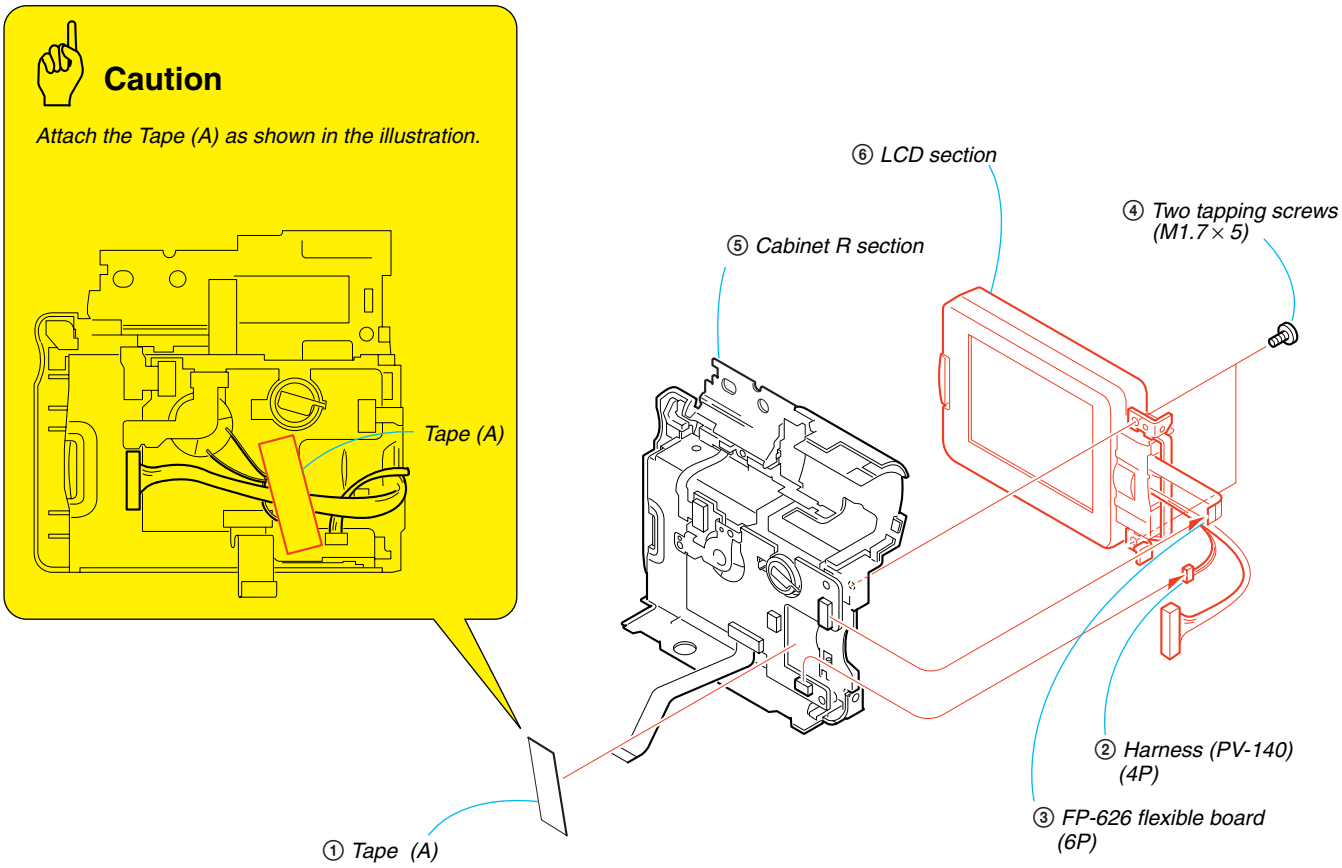
Caution

When installing the MA-421 board, attach the HP sheet so that the metal terminals of the headphones jack are hidden (insulated) by the HP sheet.

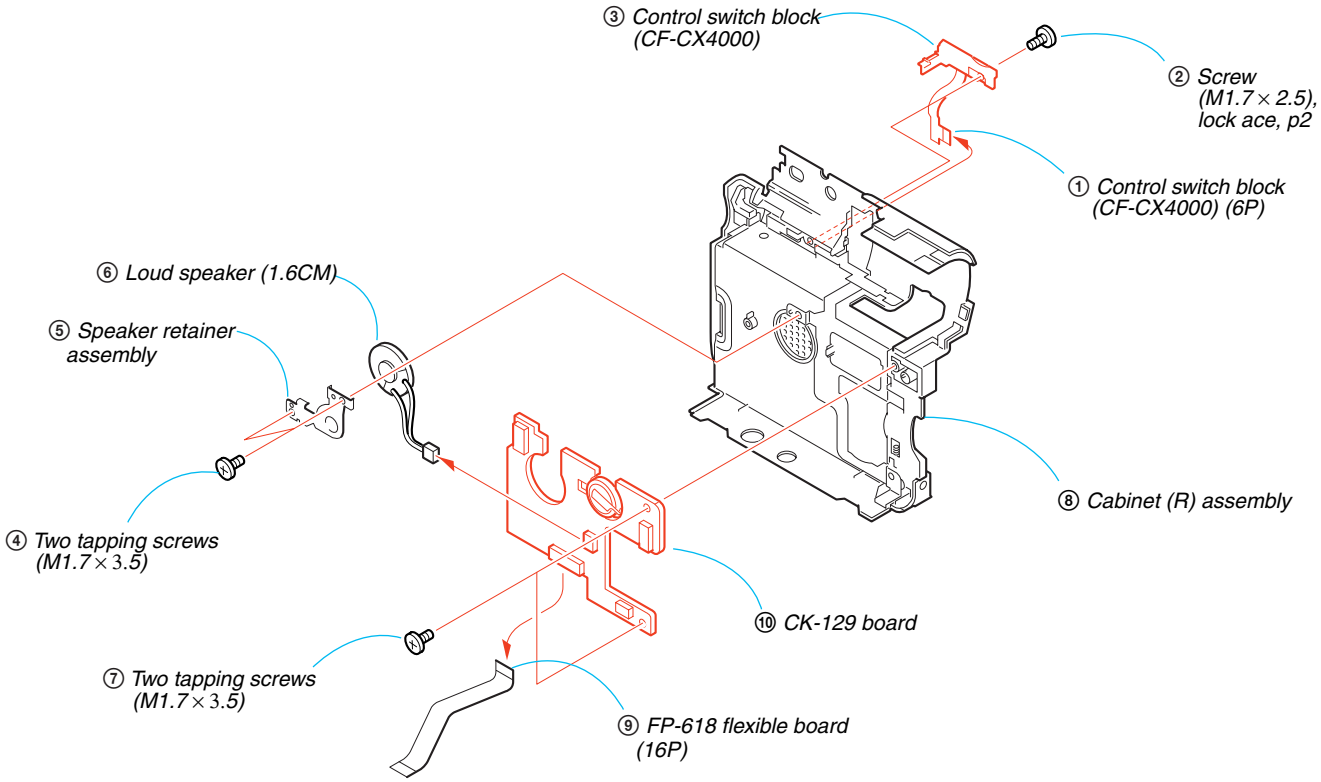
2-5. CABINET (R) SECTION



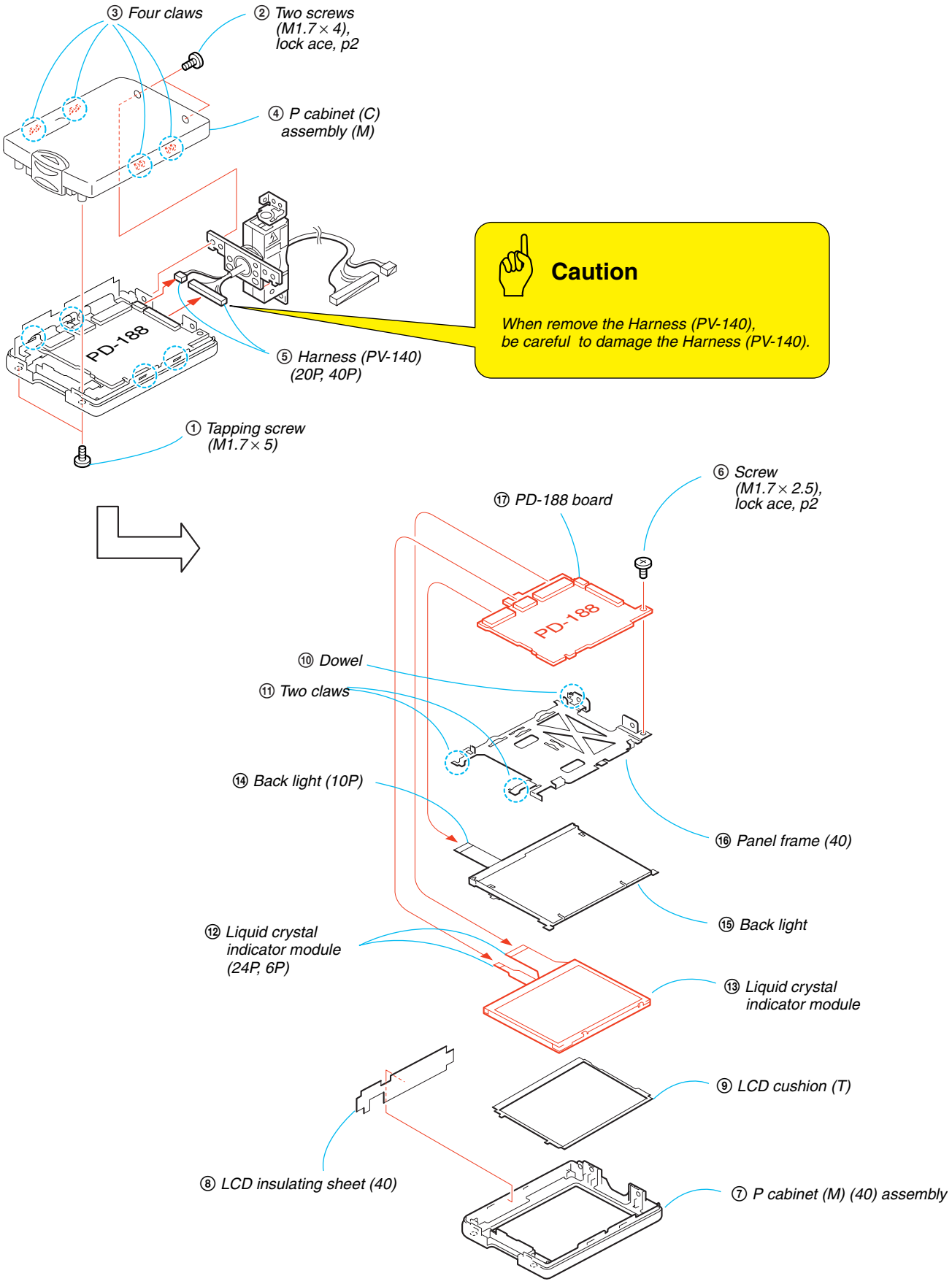
2-6. LCD SECTION



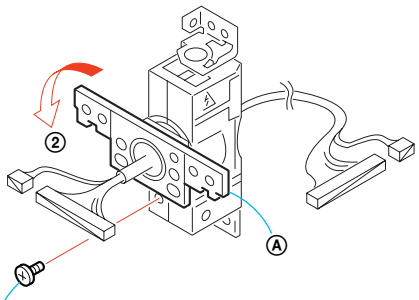
2-7. CK-129 BOARD, CONTROL SWITCH BLOCK (CF-CX4000)



2-8. PD-188 BOARD, LCD UNIT



2-9. HINGE (40) ASSEMBLY



① Screw (M1.7 × 4), lock ace, p2

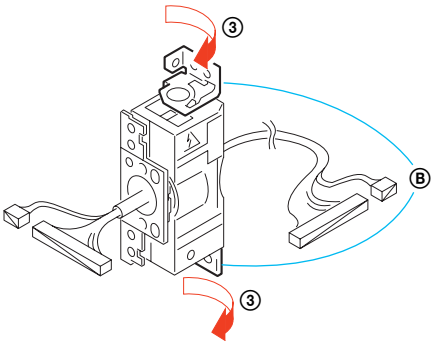
② Rotate to the "A" marked portion counterclockwise by 90 degrees

Caution

Rotation of the LCD panel has limitation due to its hinge in this model. Excessive force to rotate the LCD panel damages the hinge.
(Refer to "Caution"of 2.1 Pcabinet assembly.)

Caution

If the FP-626 flexible board is removed once, the adhesion strength of a double-sided tape decreases. Use the new FP-626 flexible board at the time of an assembly.



③ Rotate the "B" marked portion counterclockwise by 90 degrees in the direction of the arrow

⑧ Remove the FP-626 flexible board that is attached by the doble-sided tape

⑦ Hinge cover (M) (40)

Dowel for setting the position

④ Three claws

⑥ Screw (M1.7 × 4), lock ace, p2

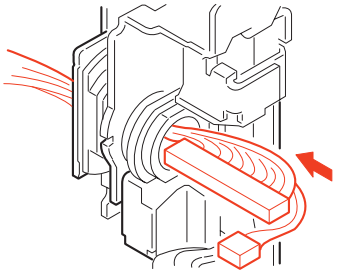
Hinge (40) assembly

⑤ Hinge cover (C) (40)

⑩ Hinge (40) assembly

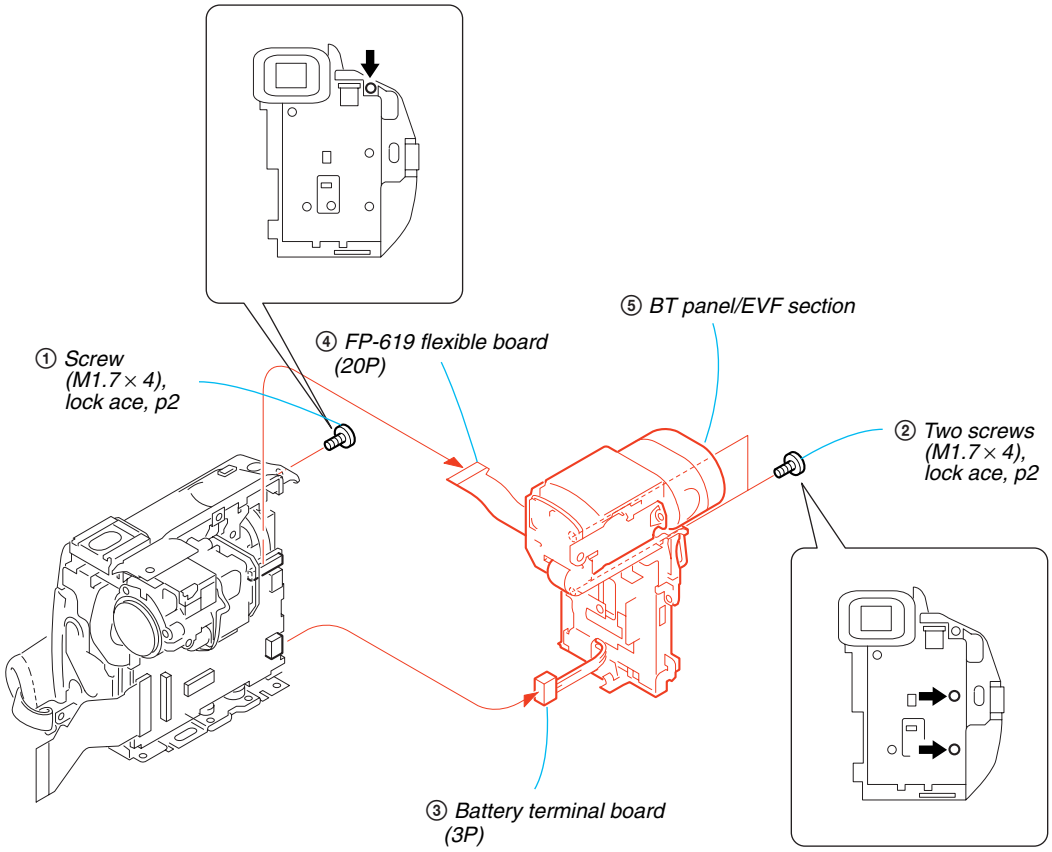
⑨ Harness (PV-140)

Remove the Harness (PV-140) in the direction of the arrow

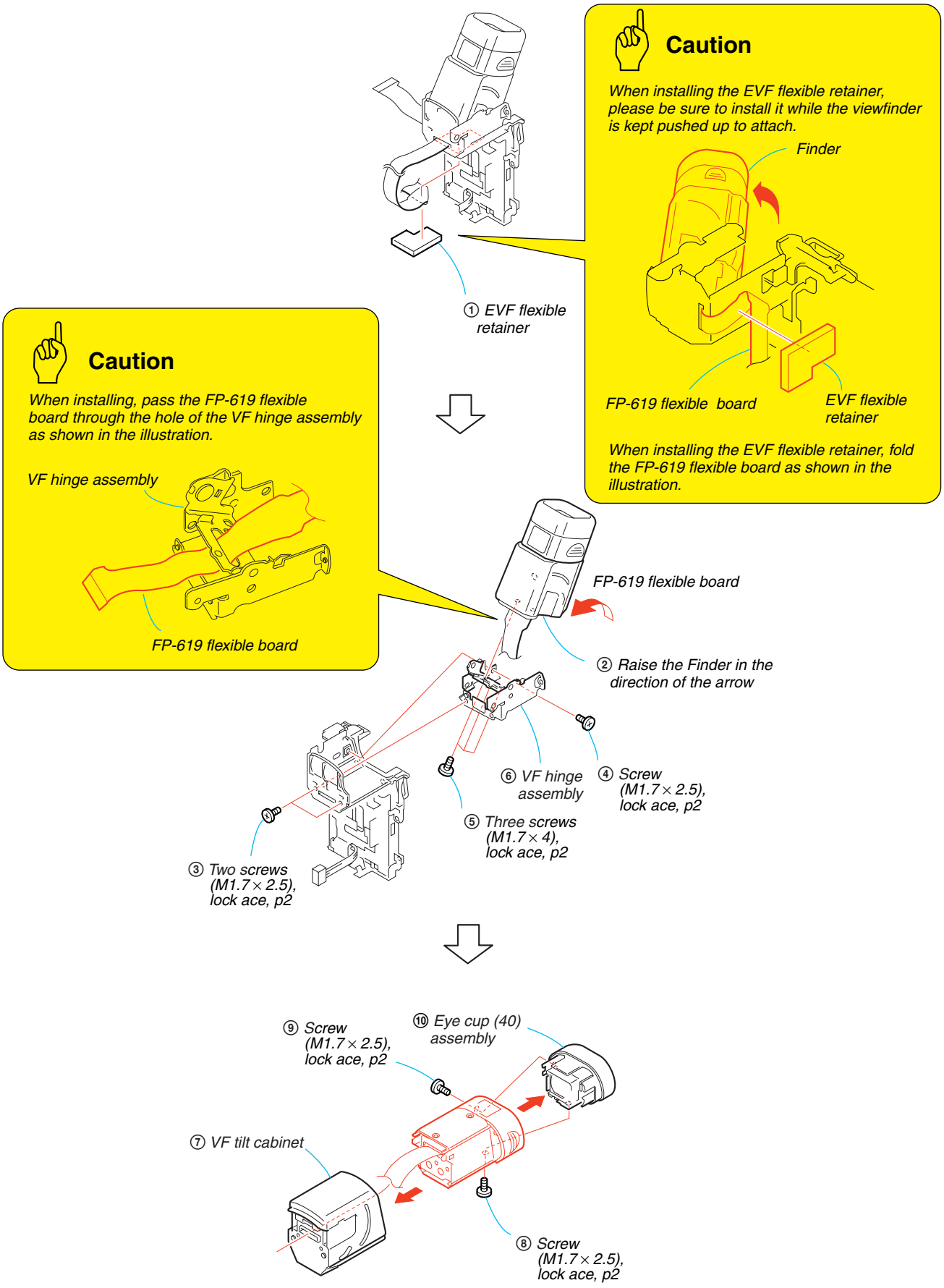


Bend the Harness (PV-140) along with connector

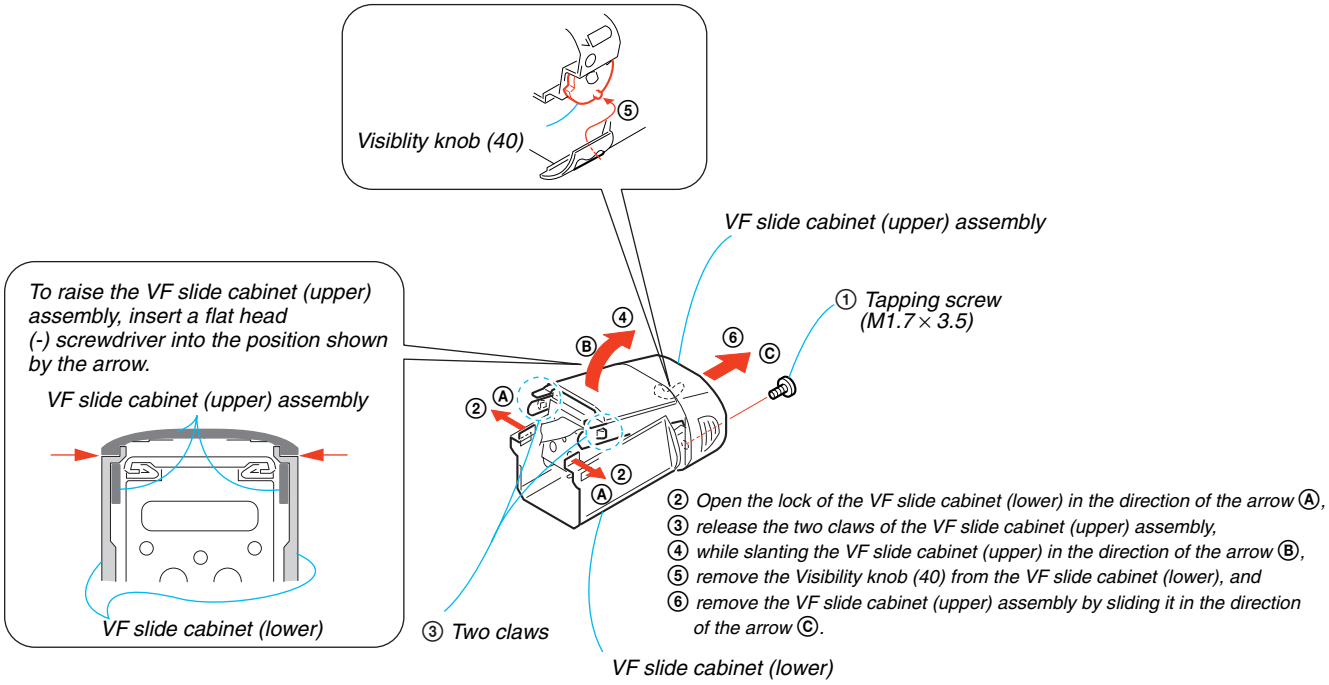
2-10. BT PANEL/EVF SECTION



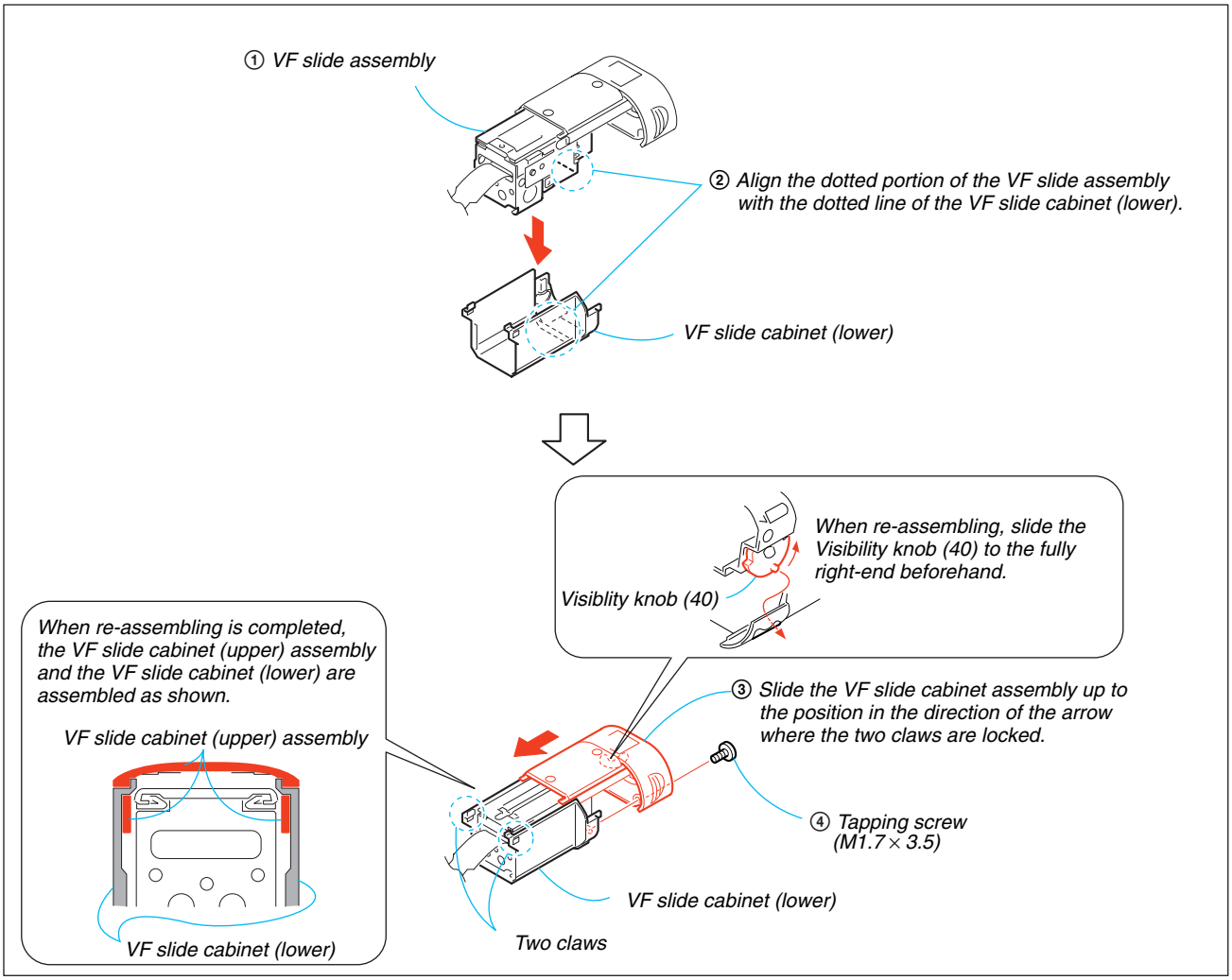
2-11. LB-085 BOARD (REMOVING OF THE EVF)-1



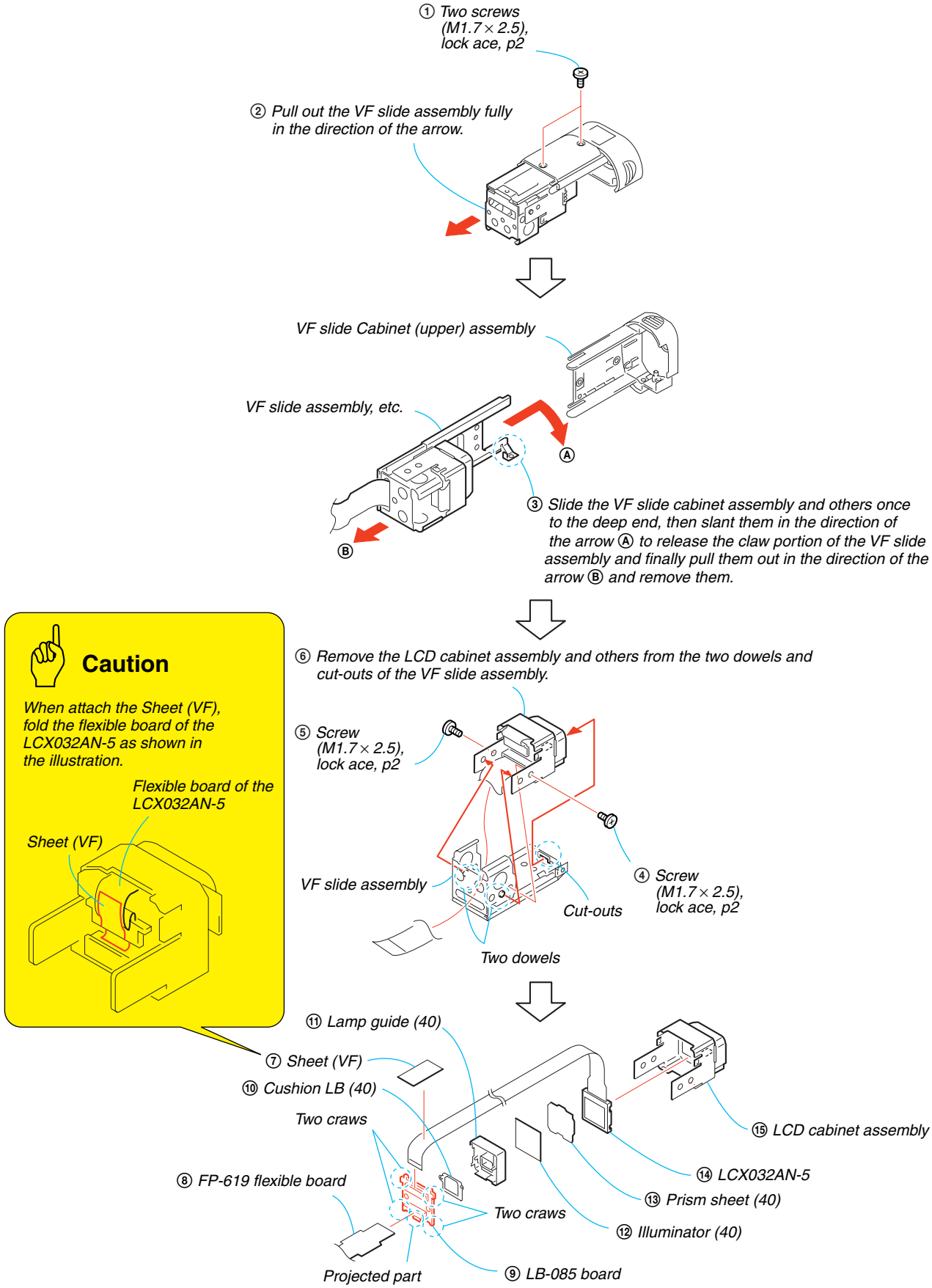
2-12. LB-085 BOARD (REMOVING OF THE EVF)-2



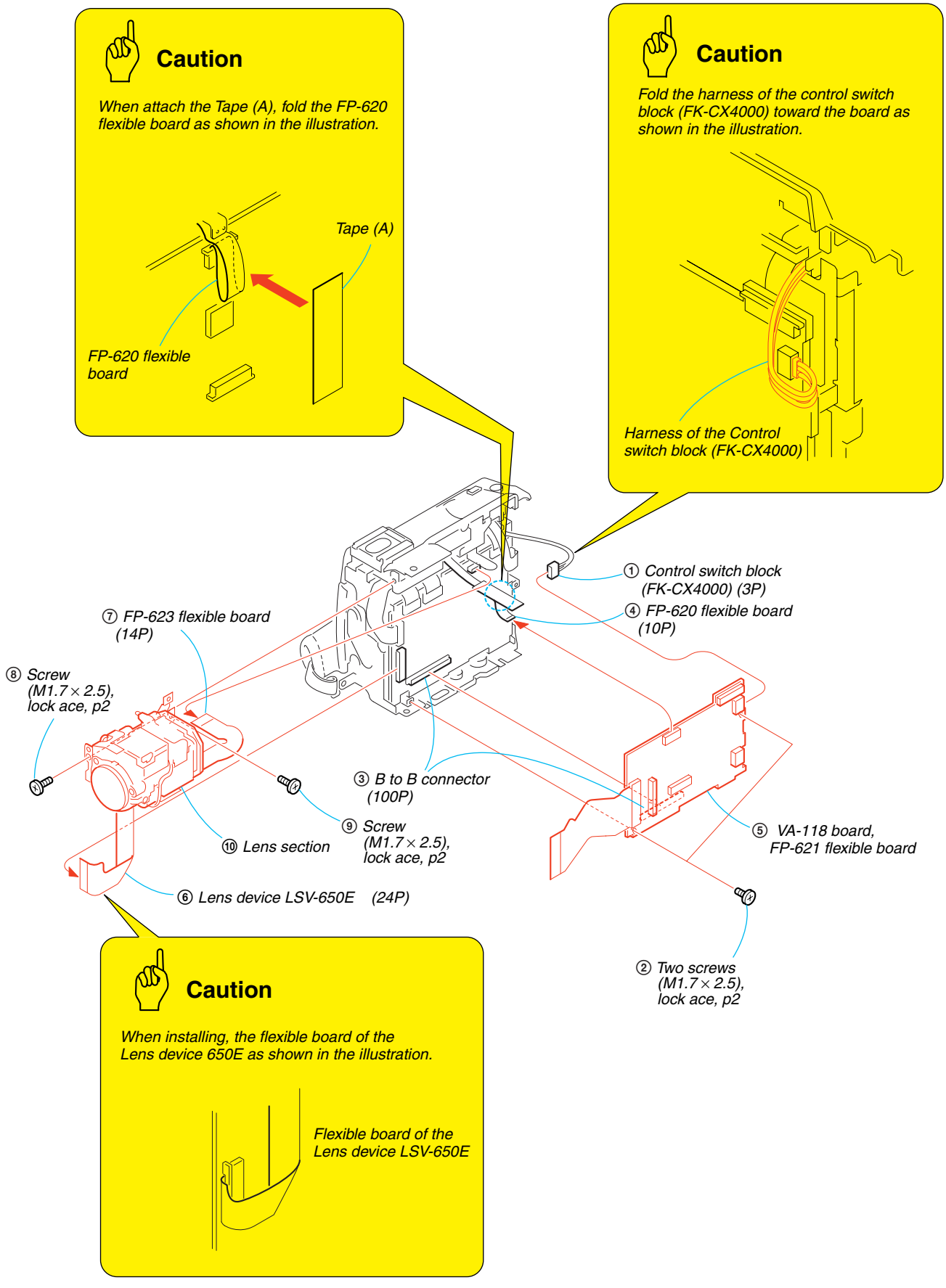
RE-ASSEMBLING THE VF SLIDE CABINET



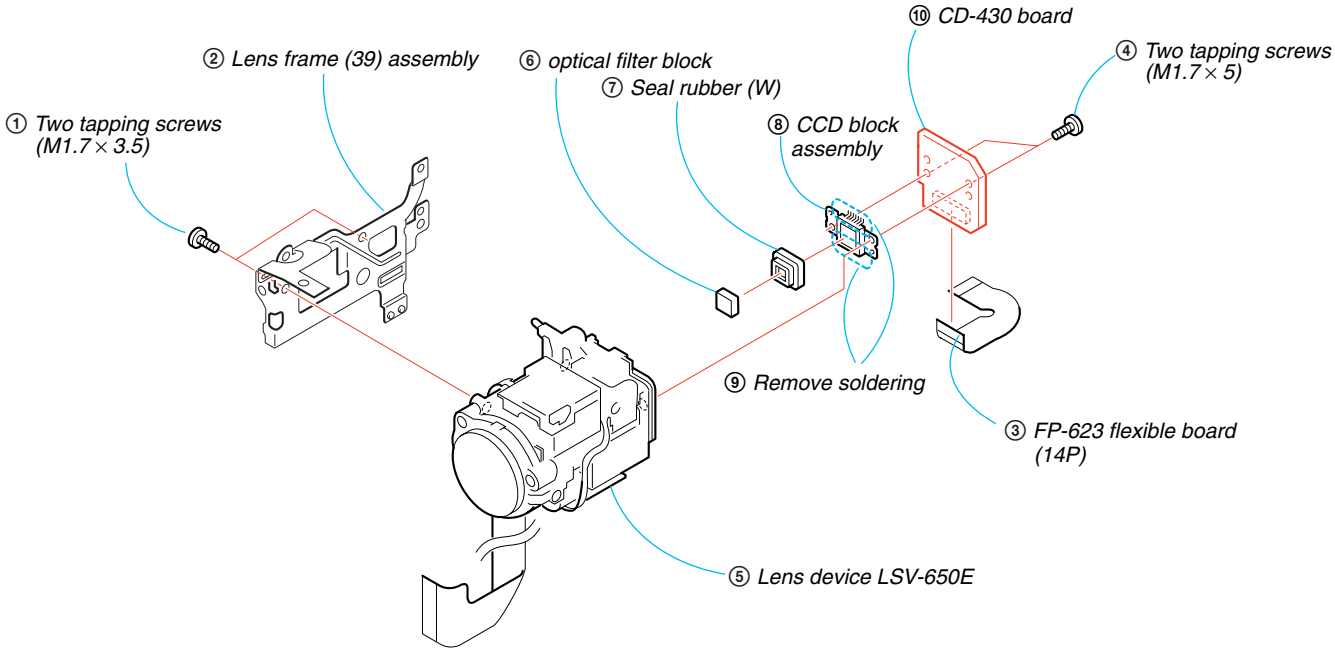
2-13. LB-085 BOARD (REMOVING OF THE EVF)-3



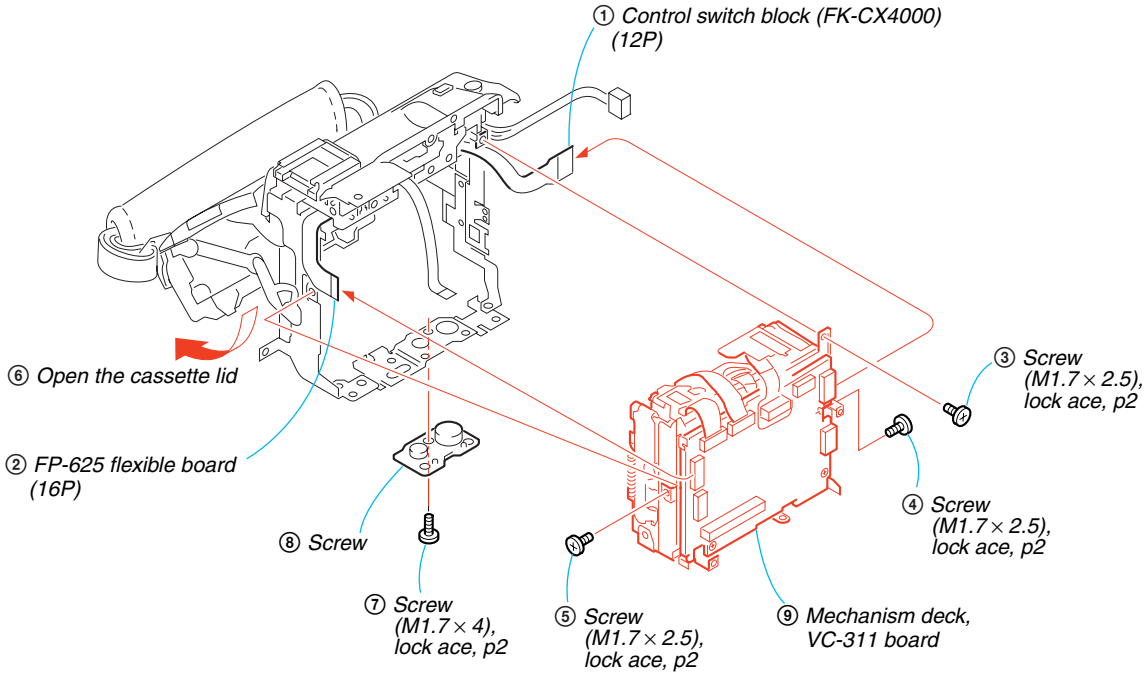
2-14. VA-118 BOARD, LENS SECTION



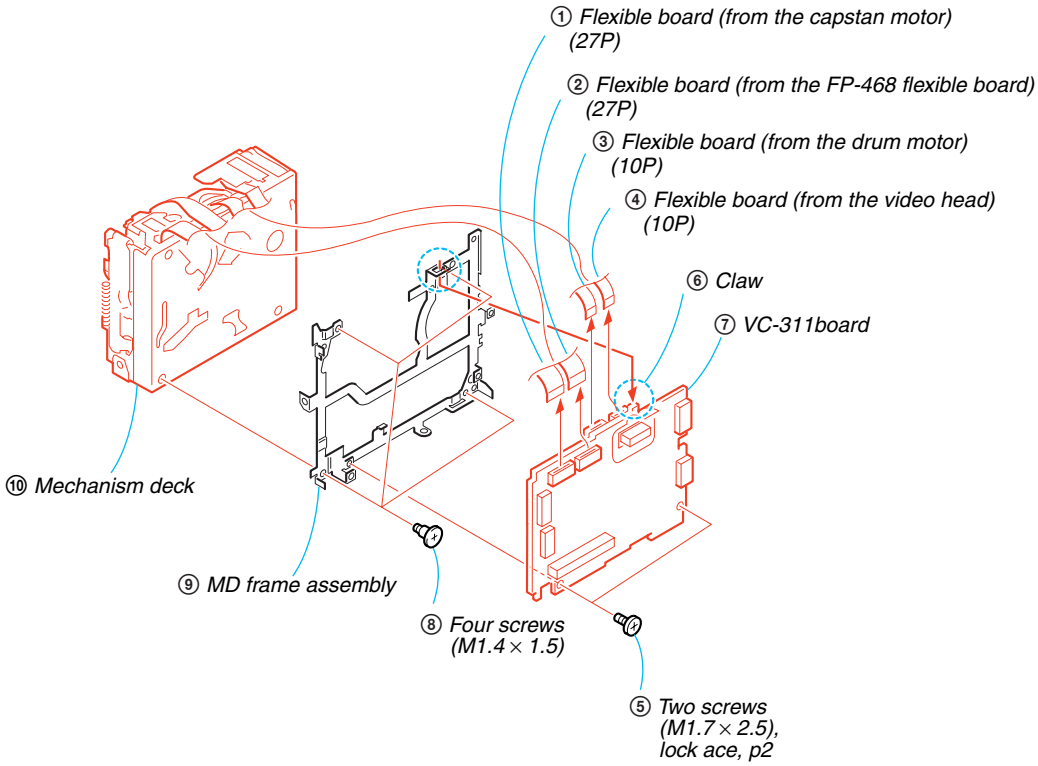
2-15. CD-430 BOARD



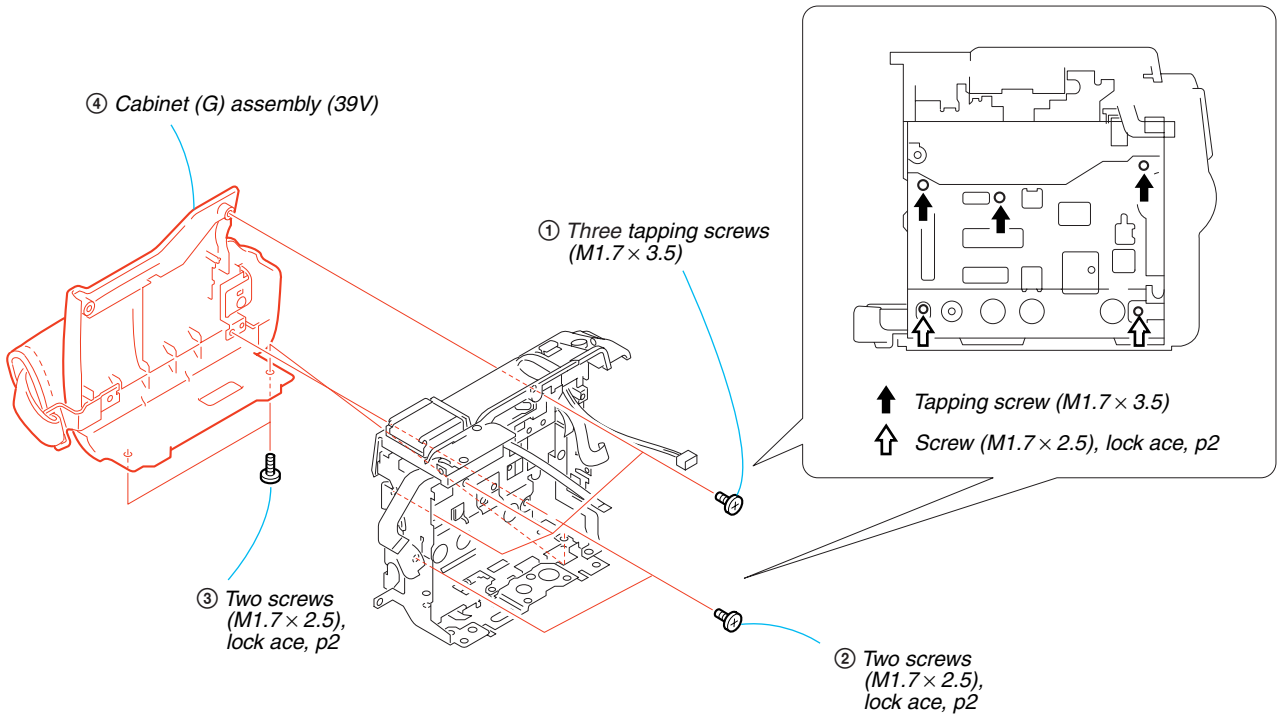
2-16. MECHANISM DECK, VC-311 BOARD (1)



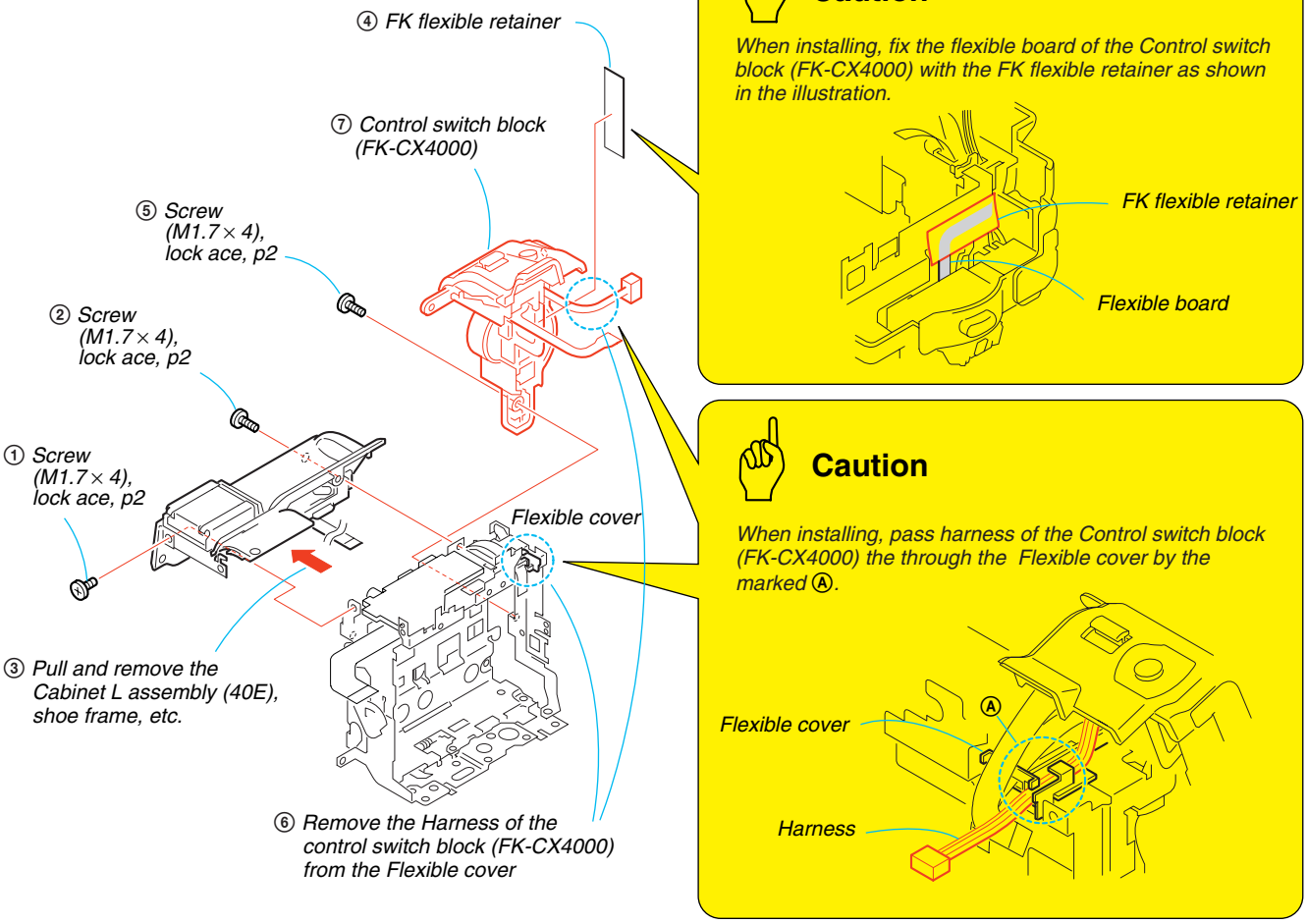
2-17. MECHANISM DECK, VC-311 BOARD (2)



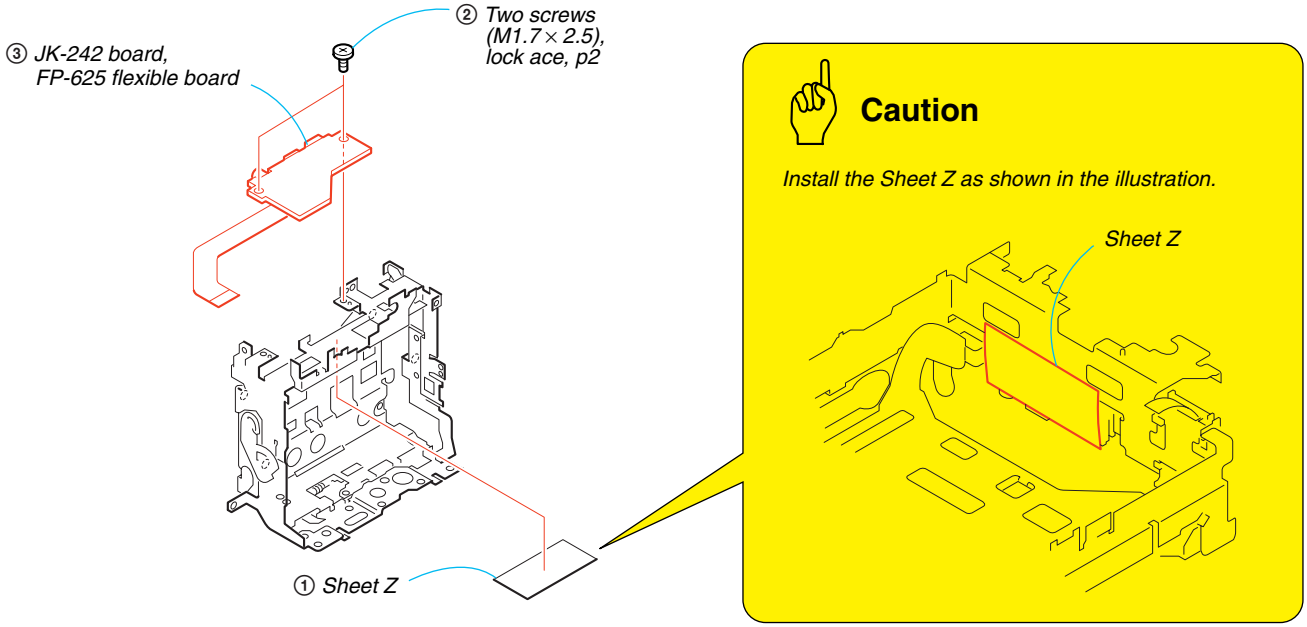
2-18. CABINET (G) ASSEMBLY (39V)



2-19. CONTROL SWITCH BLOCK (FK-CX4000)



2-20. JK-242 BOARD



[SERVICE POSITION TO CHECK THE VTR SECTION]

Connection to Check the VTR Section

To check the VTR section, set the VTR to the "Forced VTR power ON" mode.
Operate the VTR functions using the adjustment remote commander (with the HOLD switch set in the OFF position).

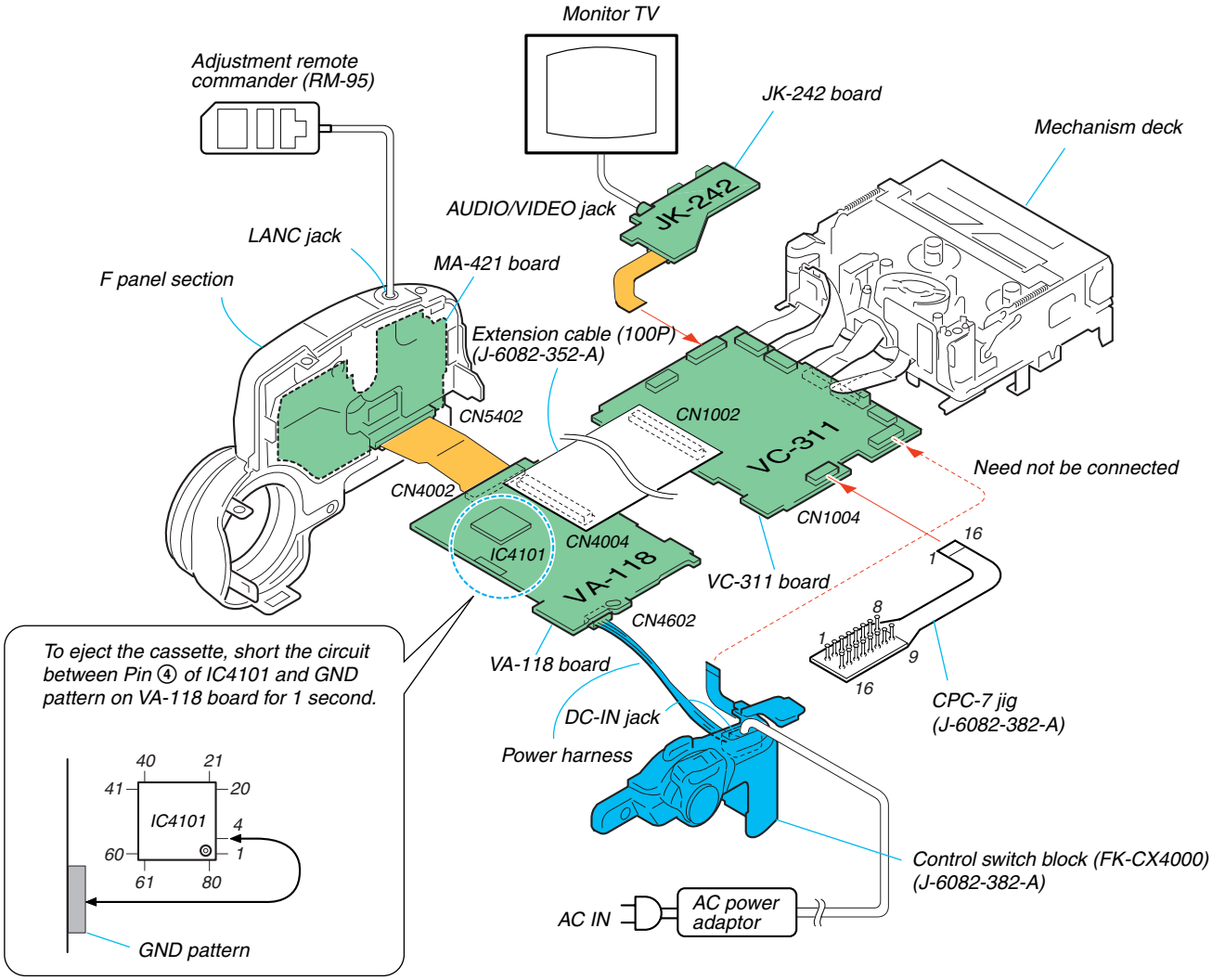
Setting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 00.
3) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced VTR Power ON" mode

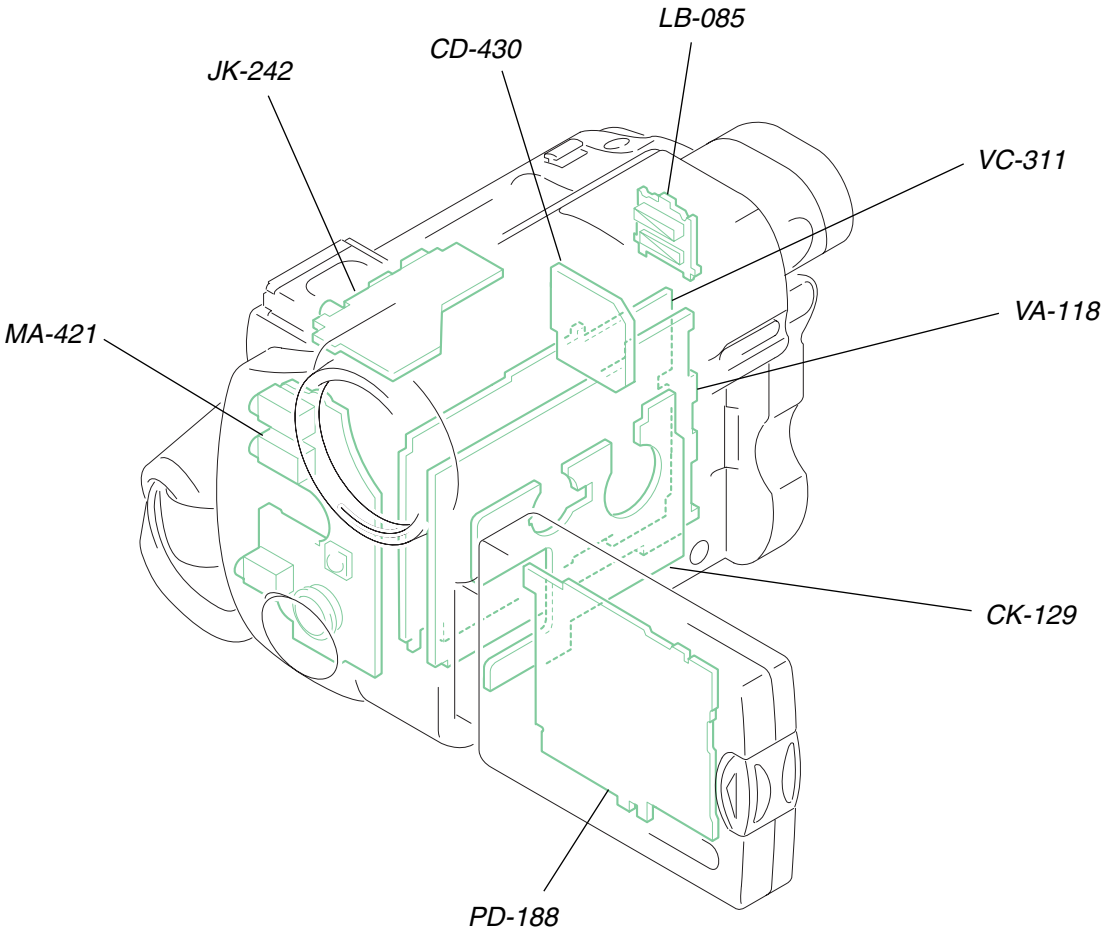
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 00.
3) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
4) Select page: 0, address: 01, and set data: 00.

(To eject the cassette, short the circuit between Pin ④ of IC4101 and GND pattern on VA-118 board for 1 second.)



PROCEDURE OF REMOVING MECHANISM DECK

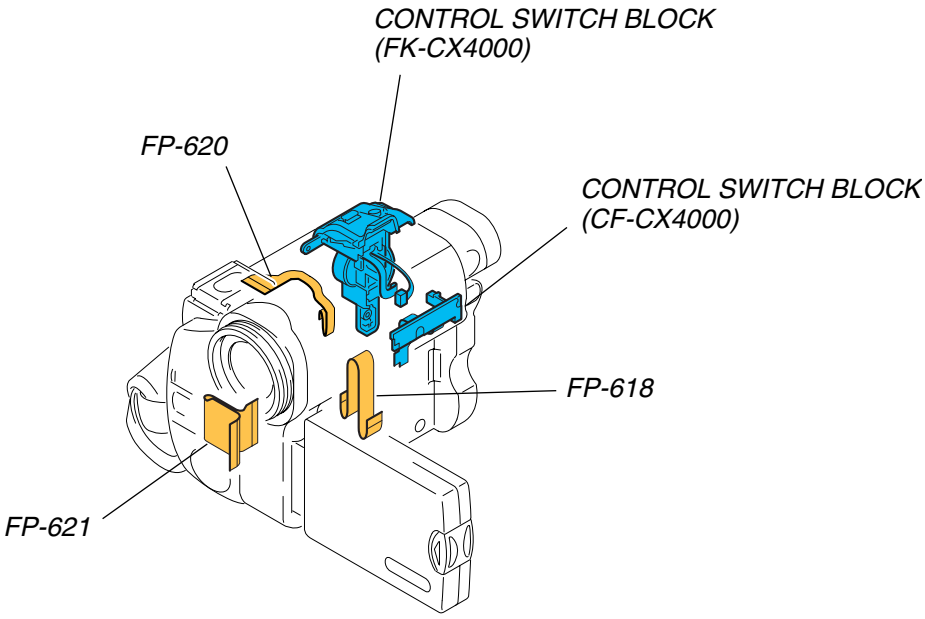
2-21. CIRCUIT BOARDS LOCATION

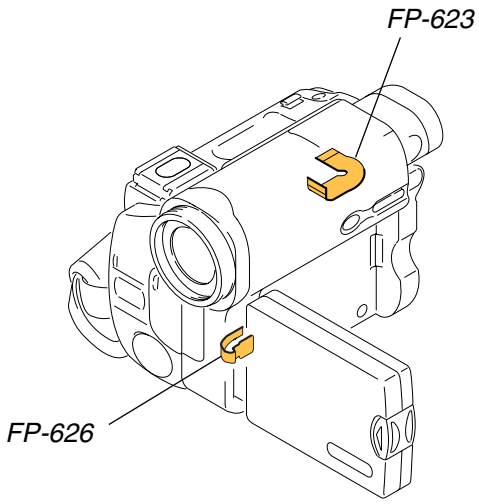


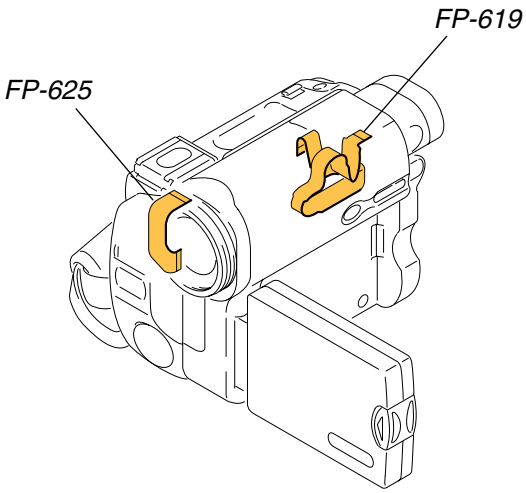
NAME	FUNCTION
CD-430	CCD IMAGER
CK-129	FUNCTION SWITCH
JK-242	RELAY
LB-085	EVF, BACKLIGHT
MA-421	MIC AMP, Y/P SENSOR, V/A IN/OUT
PD-188	RGB DRIVE, TIMING GENE, BACKLIGHT
VA-118	RGB DRIVE, HI CONTROL, Y/P SENSOR AMP, POWER IN, CHARGE, CONNECTOR
VC-311	CAMERA A/D CONV., TIMING GENERATOR, IRIS/FOCUS/ZOOM DRIVE, DV SIGNAL PROCESS, DV INTERFACE, USB, AUDIO, VIDEO OUT, REC/PB AMP, EVR, DRUM/CAPSTAN/LOADING DRIVE, CAMERA/MECHA CONTROL, AUDIO I/O, A/D, D/A CONV., CONNECTOR, DC SUPPLY

2-22. FLEXIBLE BOARDS LOCATION

The flexible boards contained in the mechanism deck and that in the lens device are not shown.





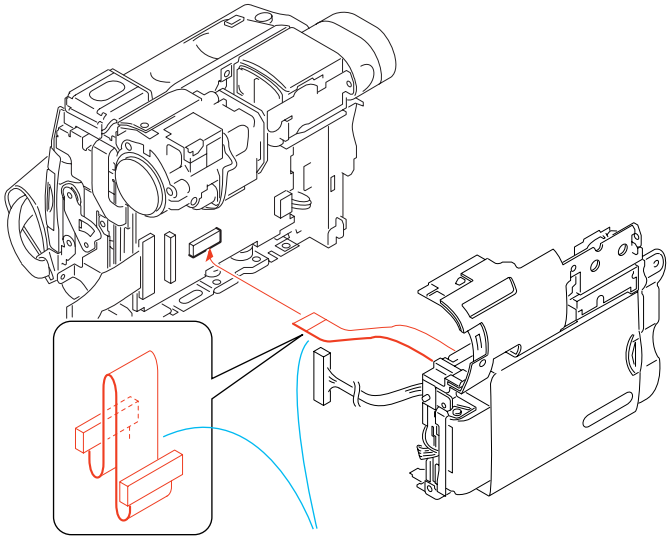


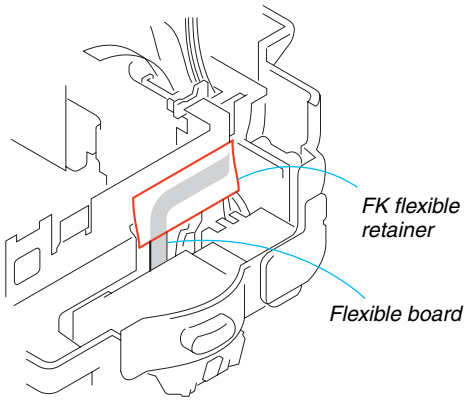
24/Feb/2003

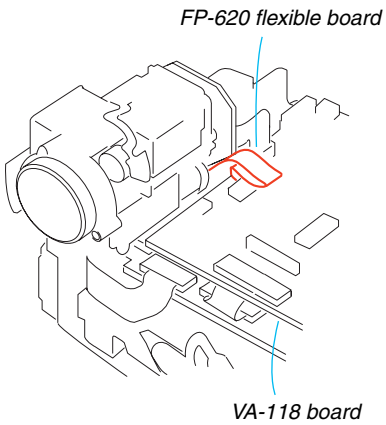
HELP

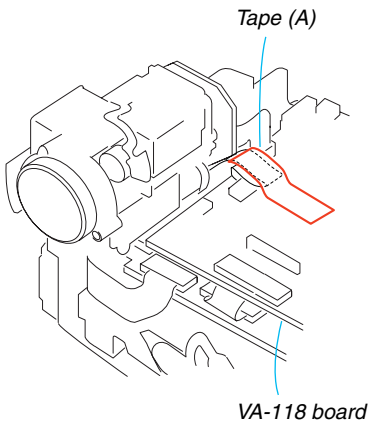
Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

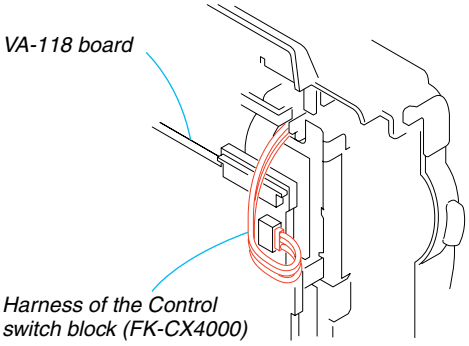
OVERALL SECTION -1

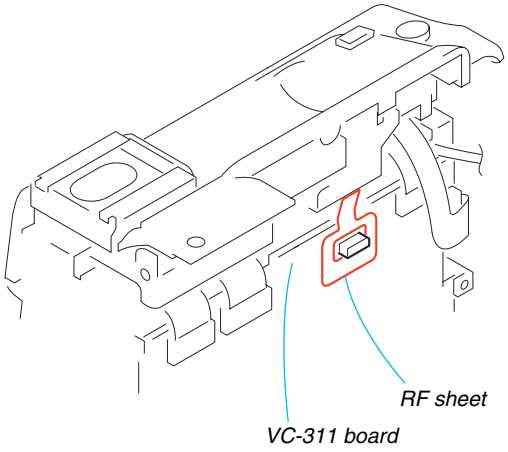




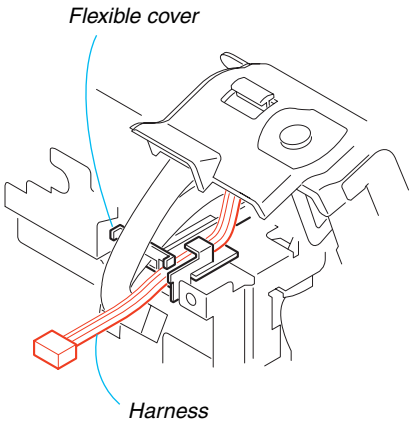




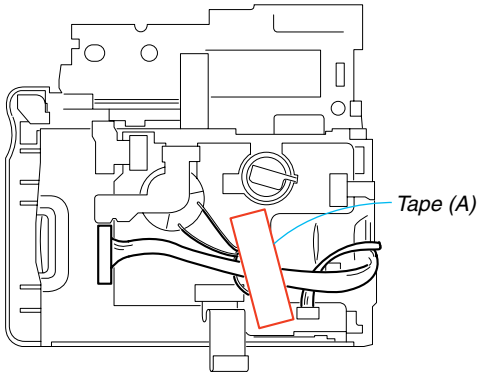




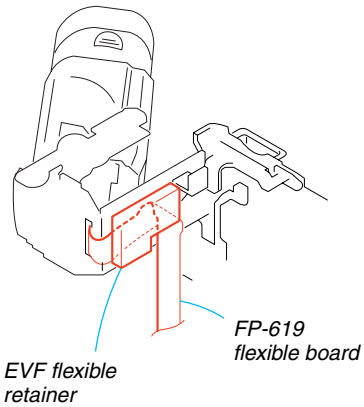
OVERALL SECTION -2

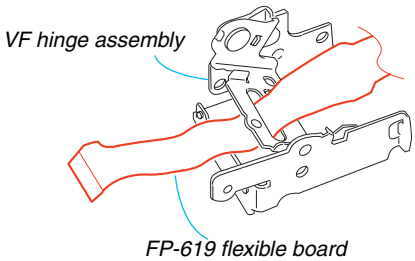


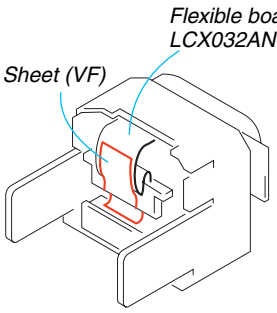
CABINET R SECTION

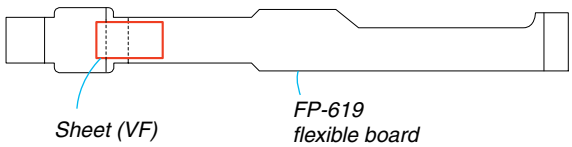


BT PANEL/EVF SECTION



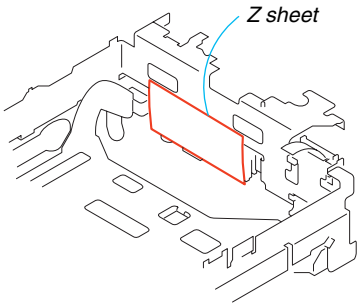


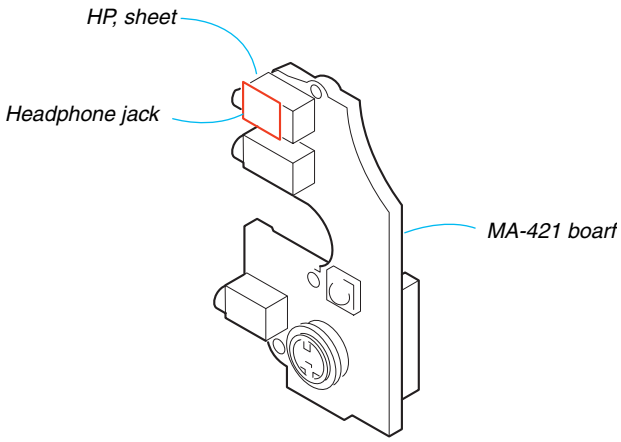




HELP

CABINET L SECTION





COVER

3. BLOCK DIAGRAMS

Link

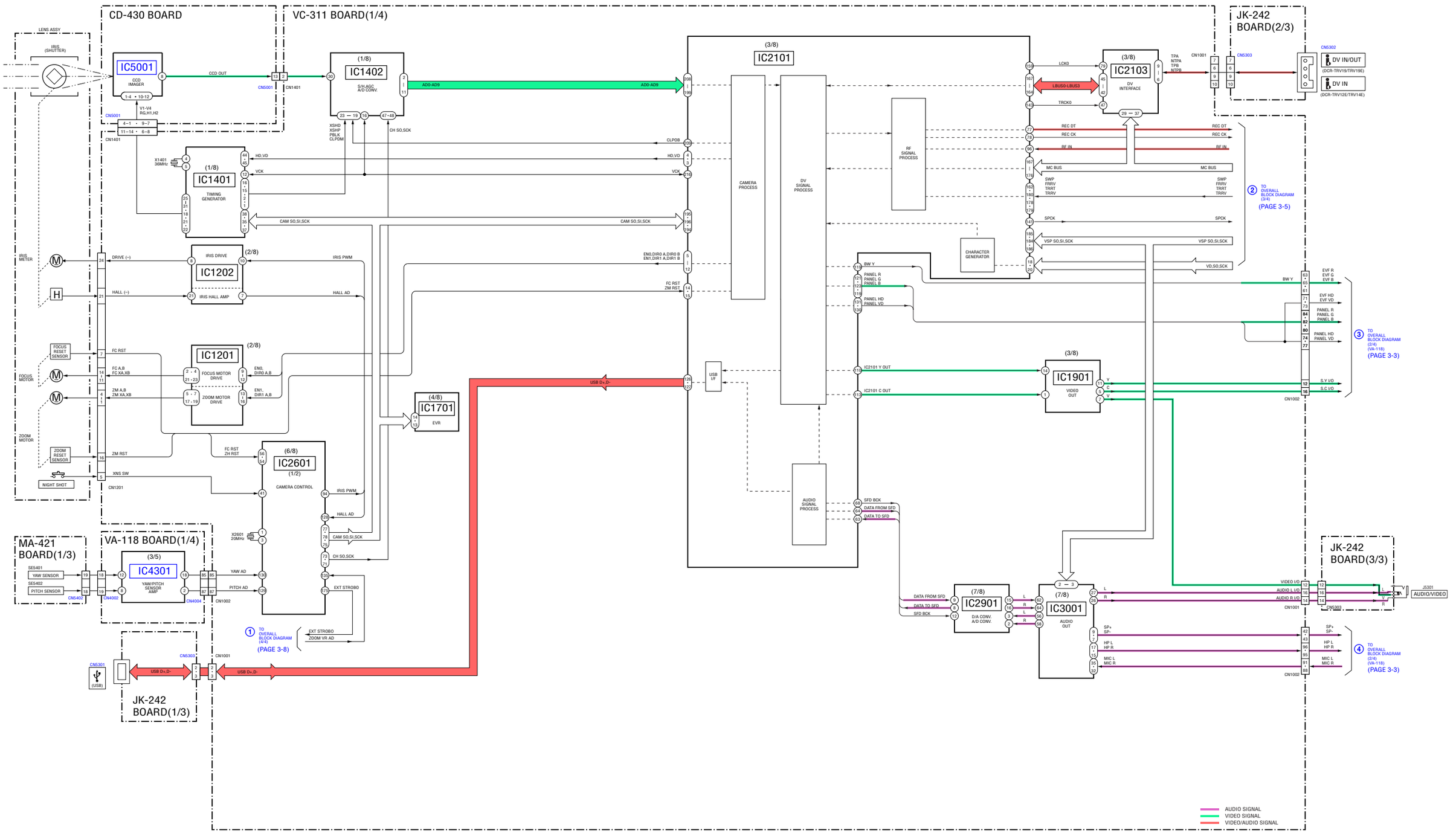
COVER

SECTION 3
BLOCK DIAGRAMS

3. BLOCK DIAGRAMS

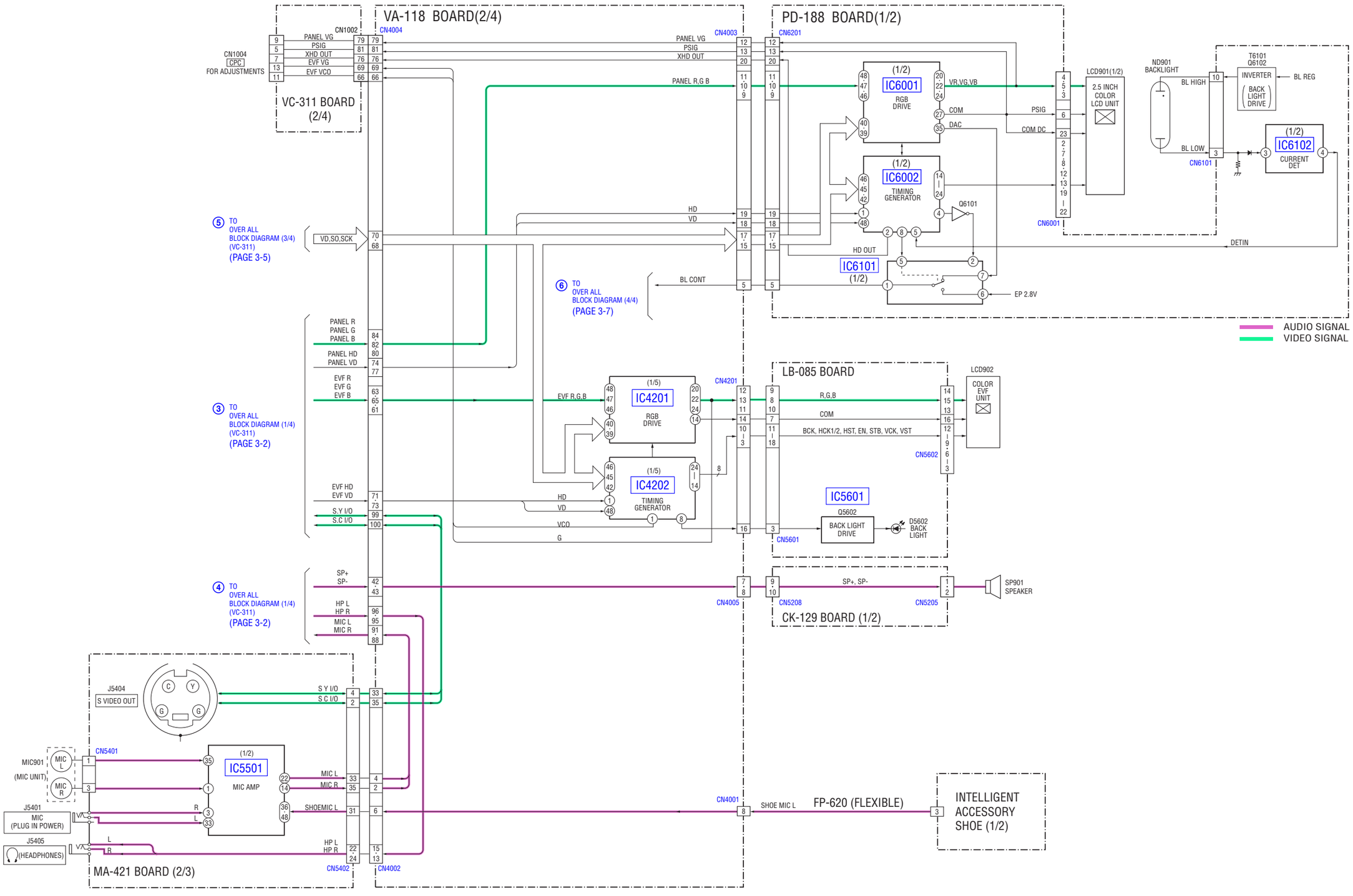
3-1. OVERALL BLOCK DIAGRAM (1/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



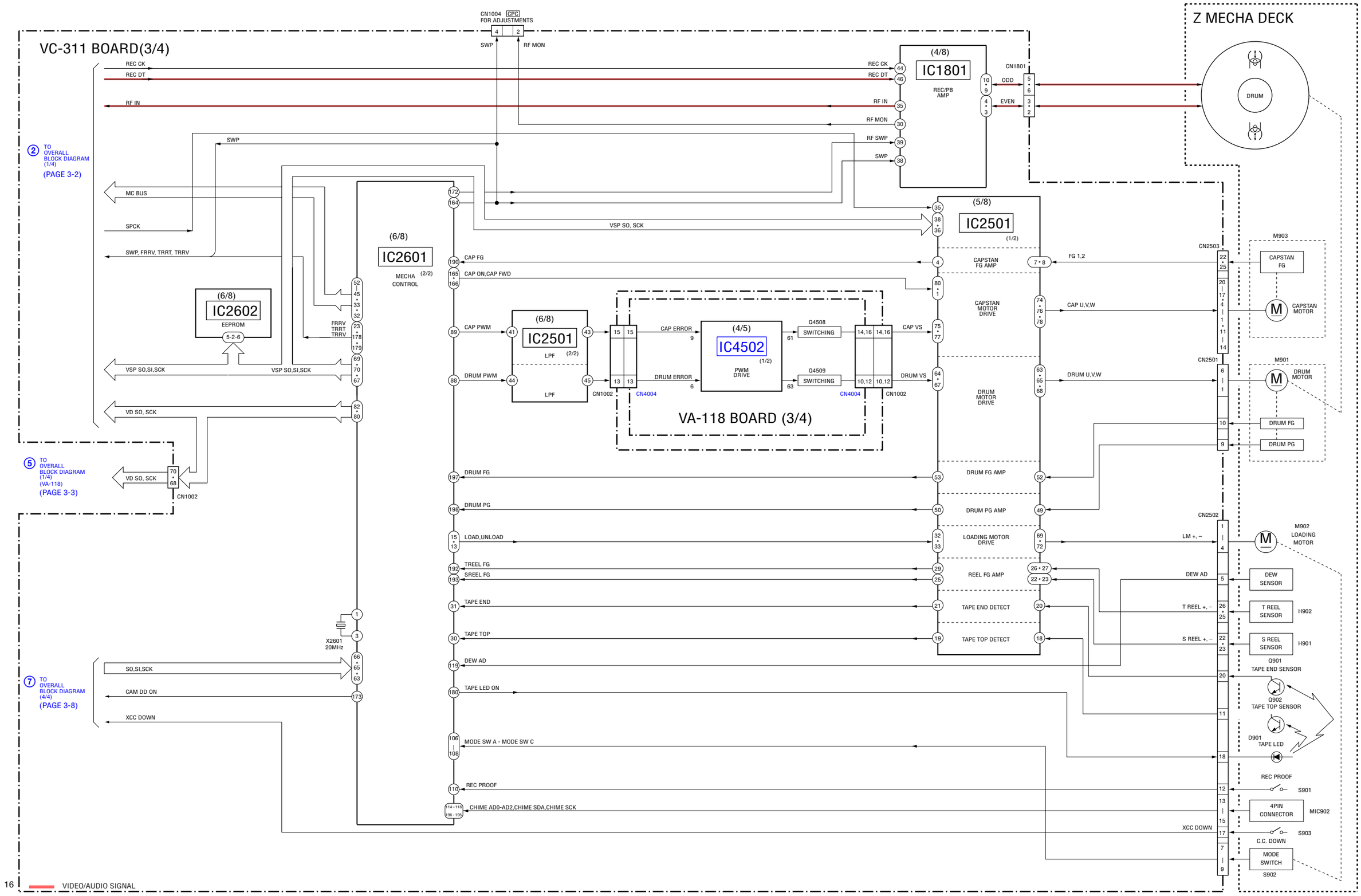
3-2. OVERALL BLOCK DIAGRAM (2/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



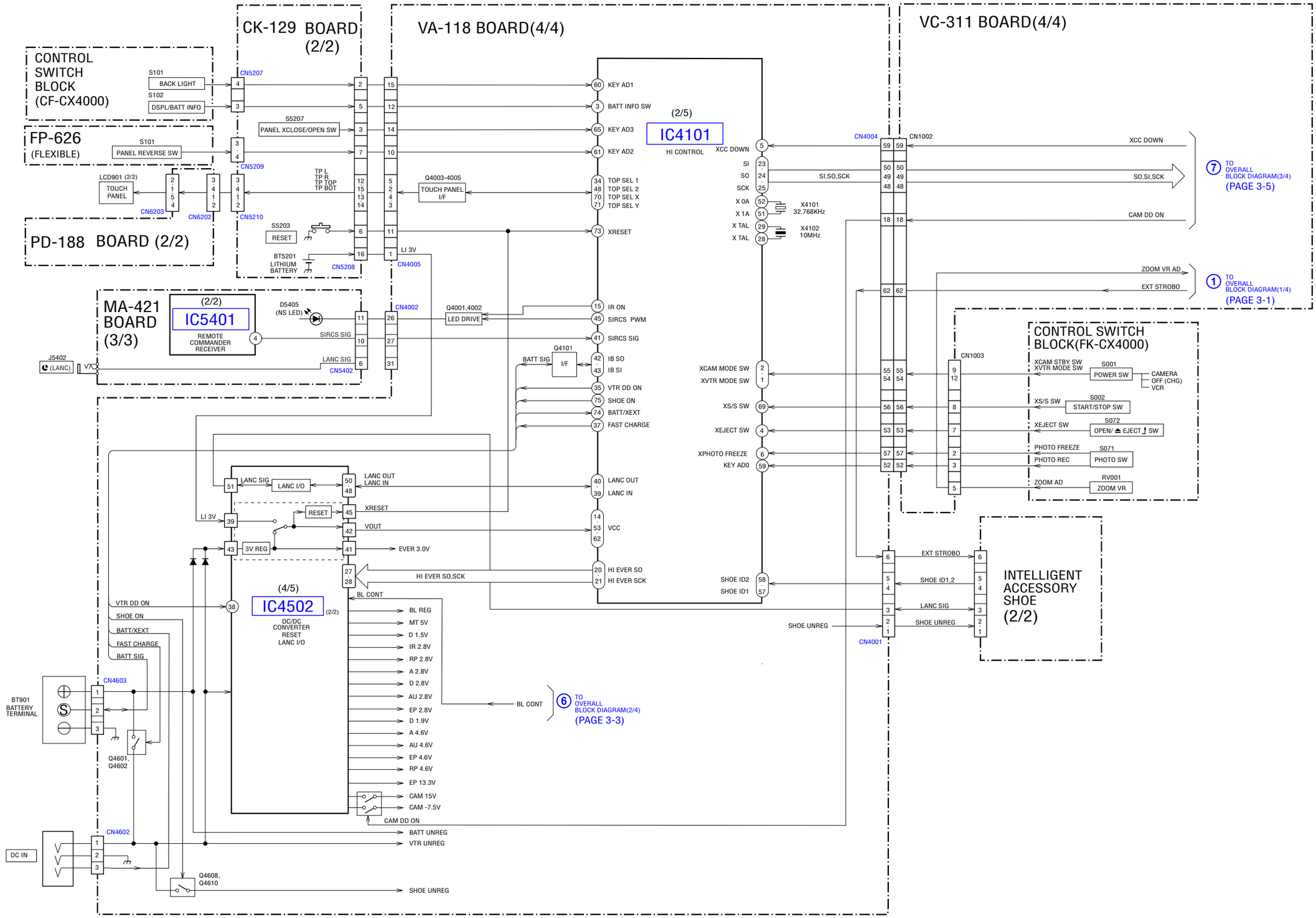
3-3. OVERALL BLOCK DIAGRAM (3/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



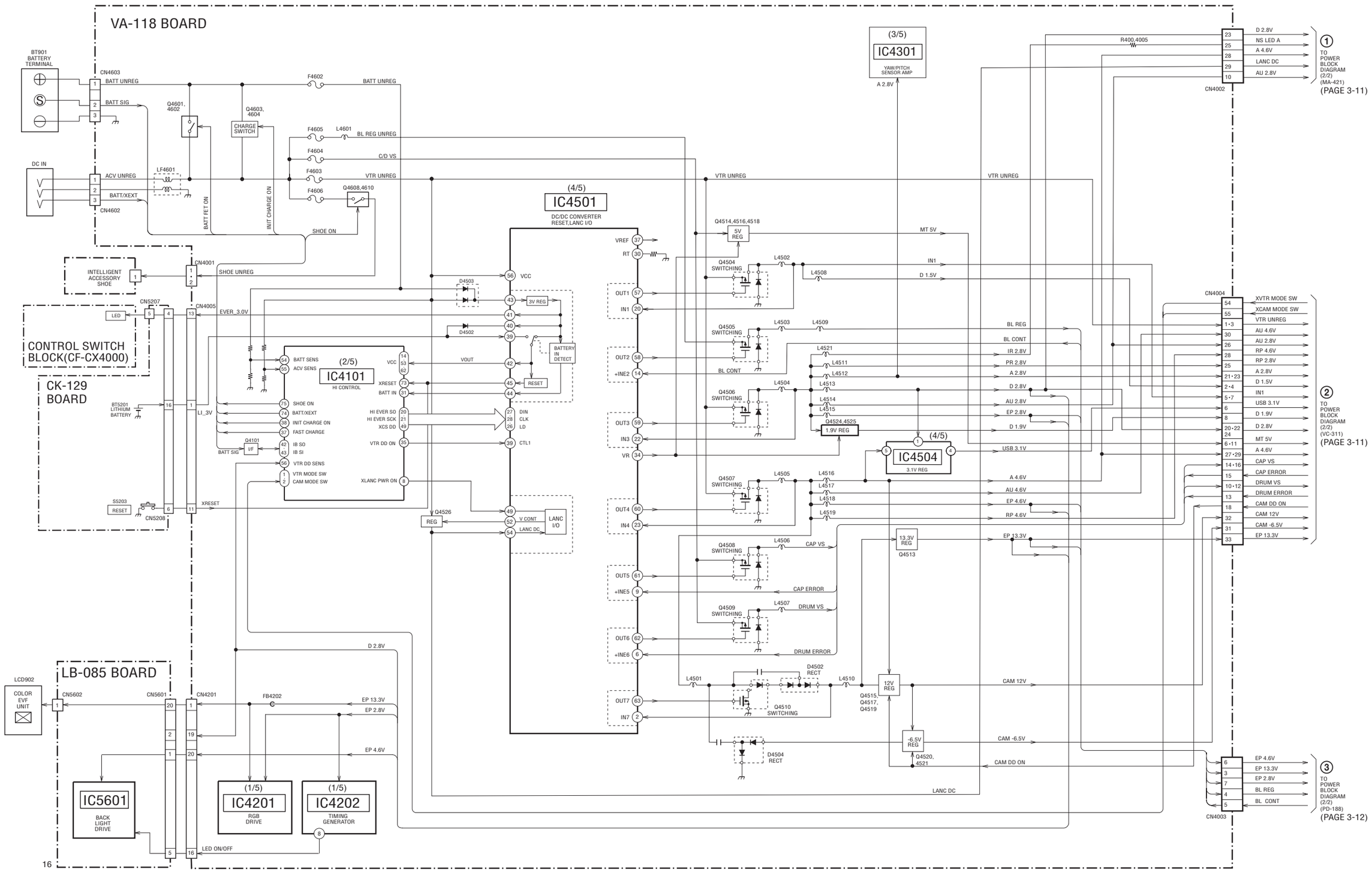
3-4. OVERALL BLOCK DIAGRAM (4/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



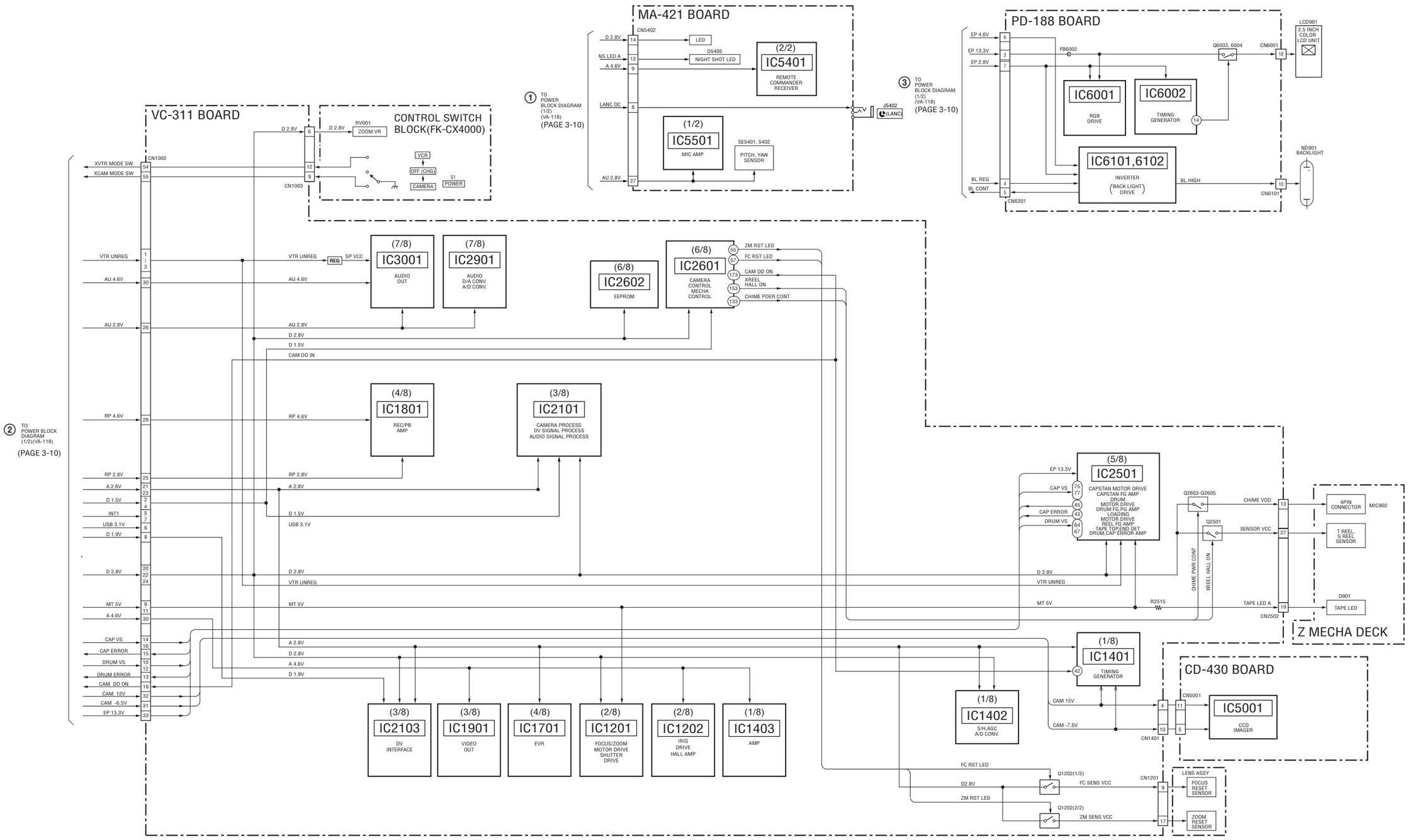
3-5. POWER BLOCK DIAGRAM (1/2)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



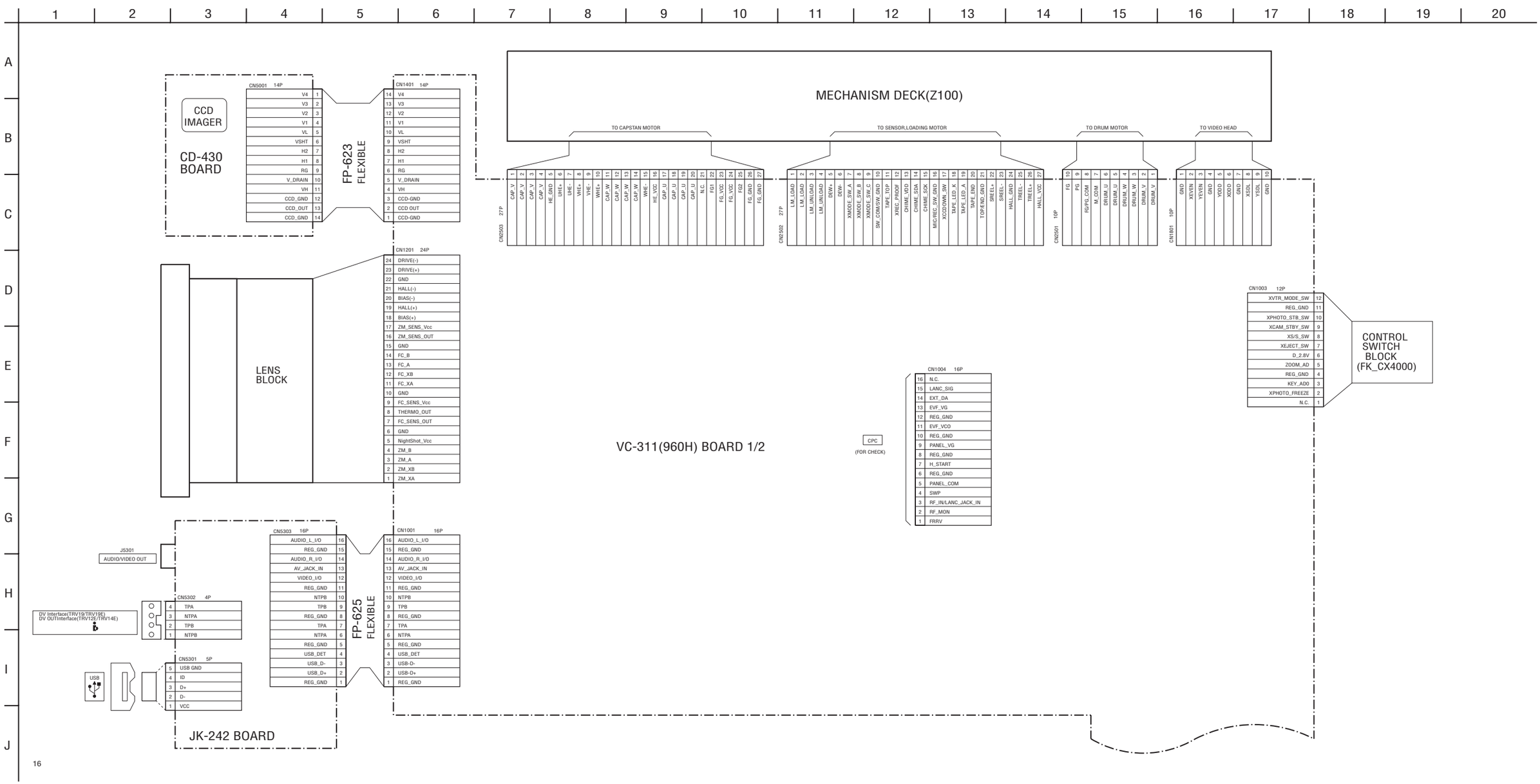
3-6. POWER BLOCK DIAGRAM (2/2)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

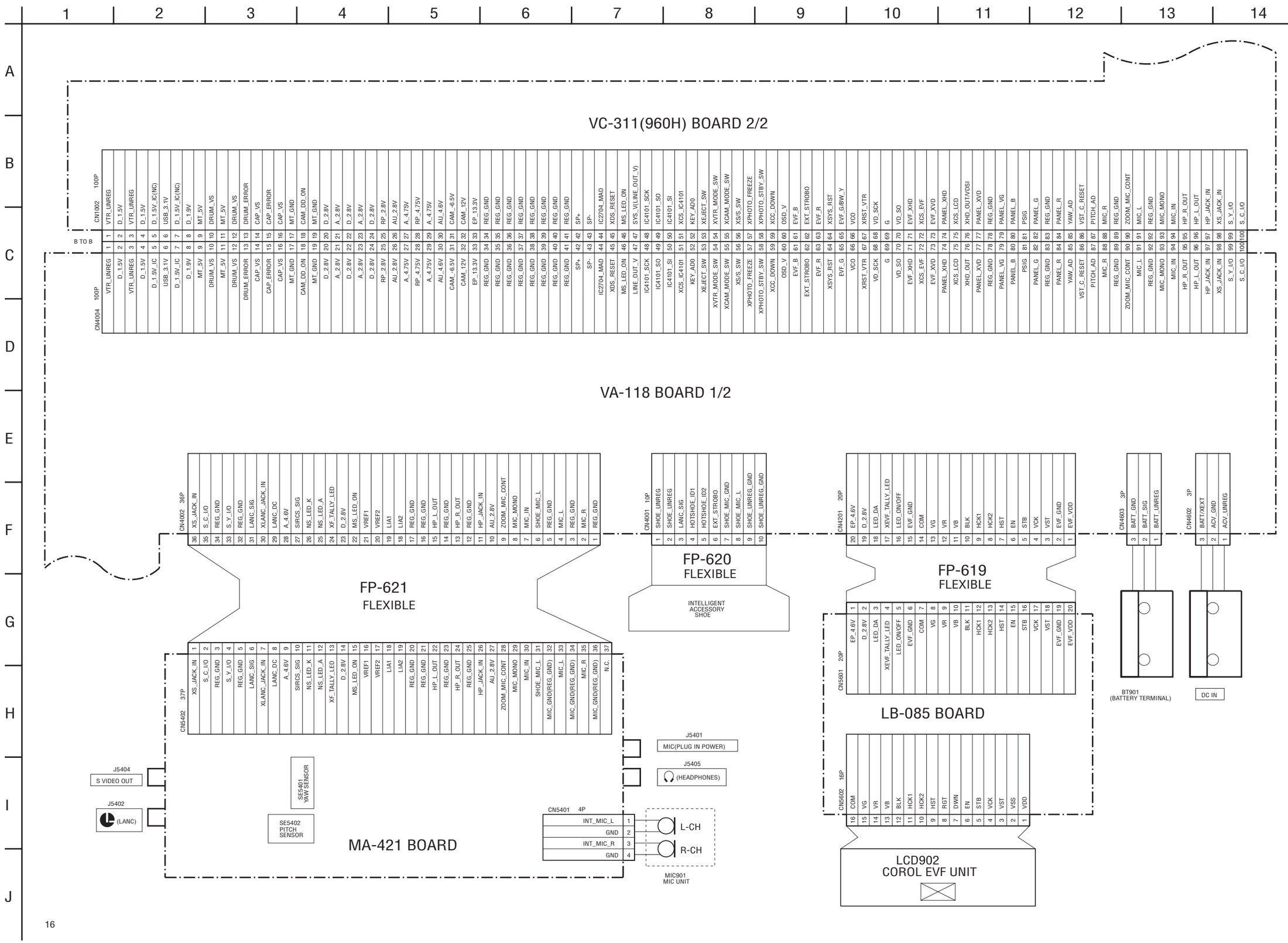


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

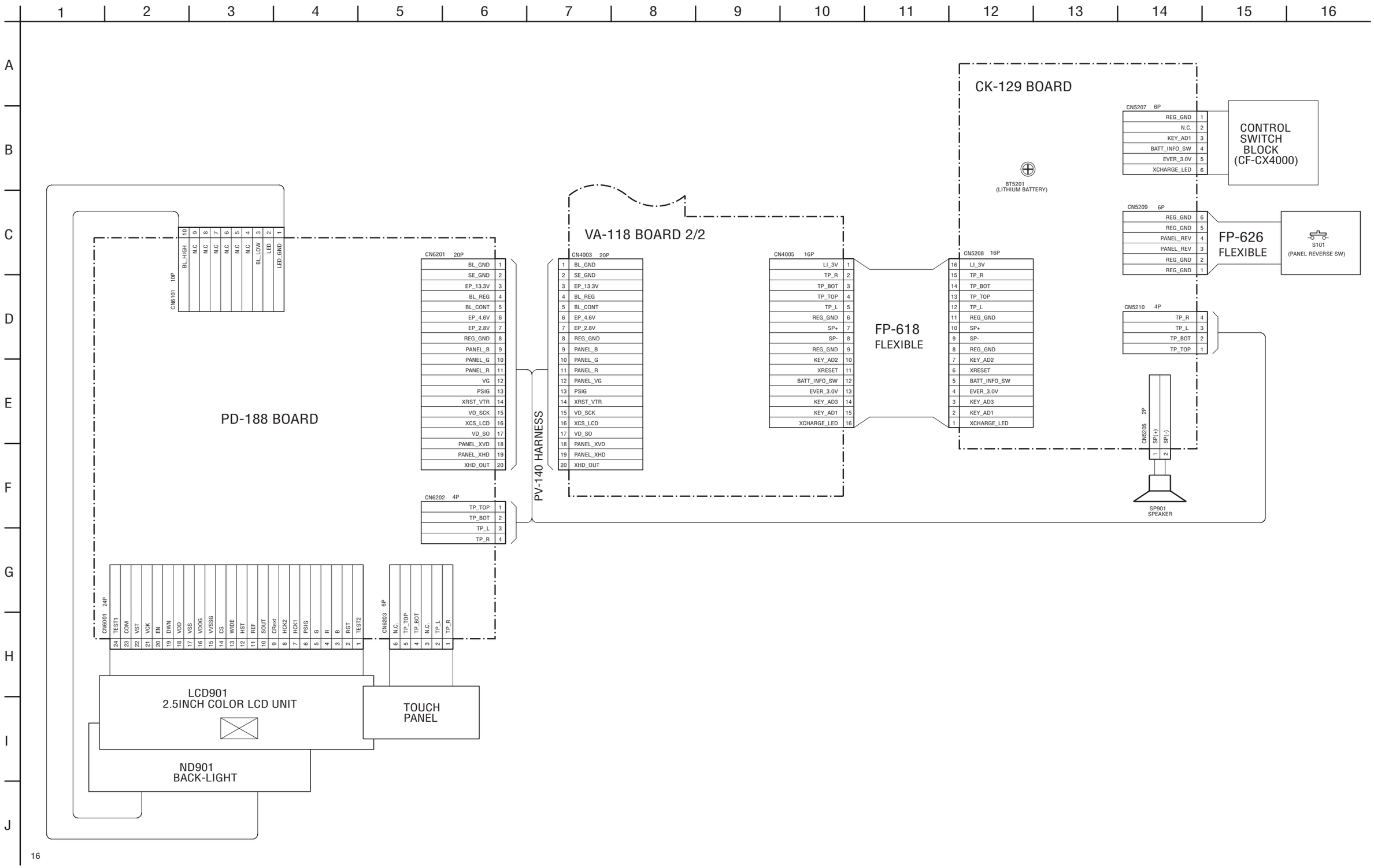
4-1. FRAME SCHEMATIC DIAGRAM (1/3)



FRAME SCHEMATIC DIAGRAM (2/3)



FRAME SCHEMATIC DIAGRAM (3/3)



COVER

4-2. SCHEMATIC DIAGRAMS

Link

COVER

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example

C541	L452
22U	10UH
TA A	2520

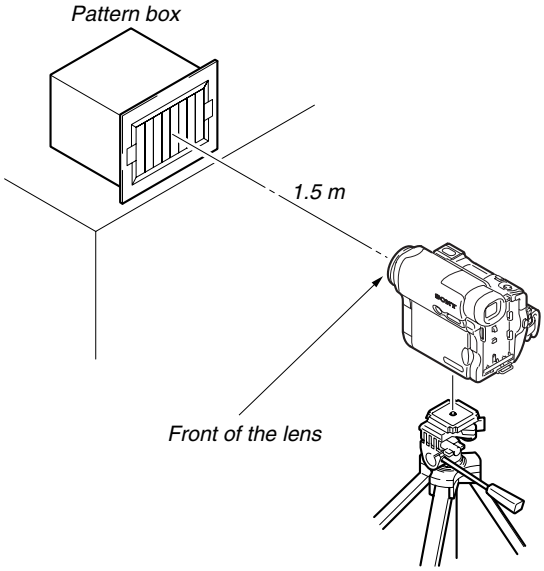
Kinds of capacitor
Temperature characteristics
External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with * differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : VIDEO SIGNAL (ANALOG)
- : AUDIO SIGNAL (ANALOG)
- : VIDEO/AUDIO SIGNAL
- : VIDEO/AUDIO/SERVO SIGNAL
- : SERVO SIGNAL
- Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

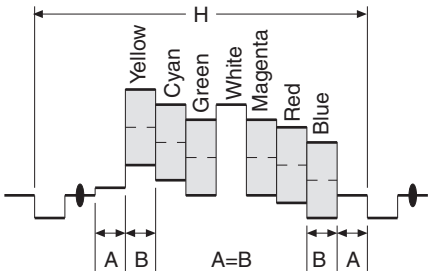


Fig. a (Video output terminal output waveform)

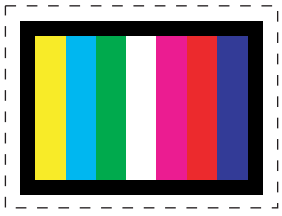


Fig.b (Picture on monitor TV)

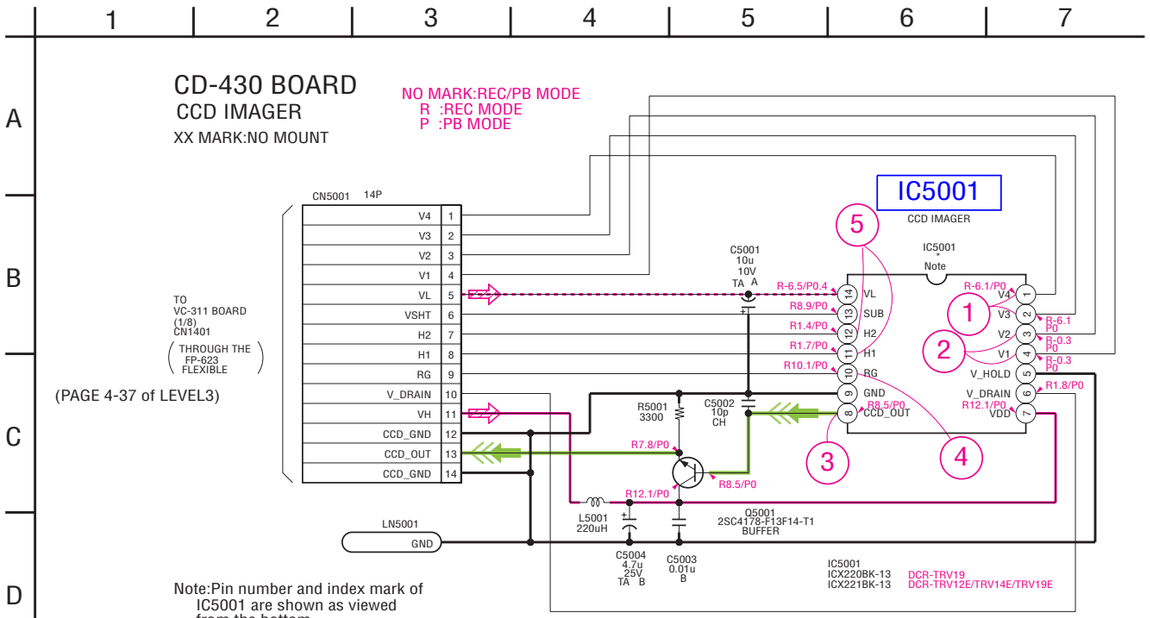
When indicating parts by reference number, please include the board name.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-2. SCHEMATIC DIAGRAMS

For Schematic Diagram

- Refer to page 4-55 for printed wiring board of CD-430 board.
- Refer to page 4-57 for printed wiring board of LB-085 board.



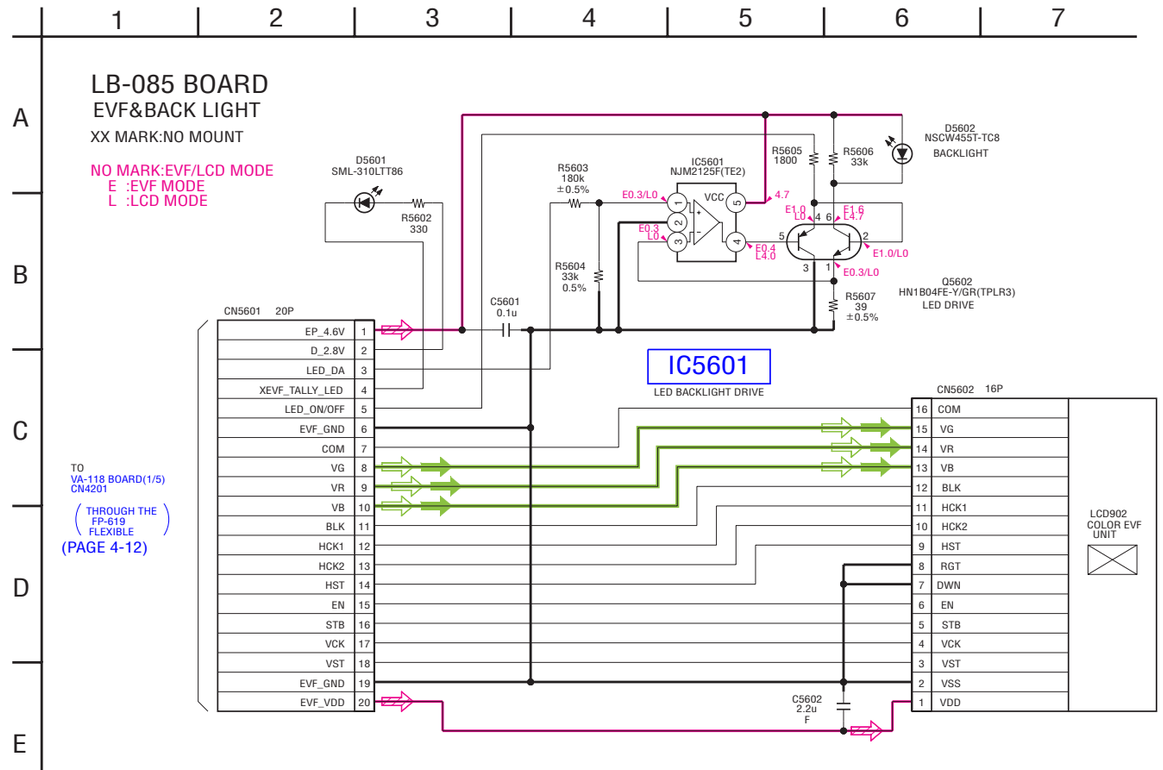
Precautions Upon Replaching CCD imager

- The CD-430 board mounted as a repair part is not equipped with a CCD imager.
  When replaching this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electrictiy from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strog light.

SIGNAL PATH

16

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⇛
PB			



SIGNAL PATH

16

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	⇒		
PB	⇨		

For Schematic Diagram

• Refer to page 4-61 for printed wiring board.

VA-118 BOARD(1/5)

RGB DRIVE,TG(EVF BLOCK)

XX MARK:NO MOUNT

NO MARK:EVF/LCD MODE
E :EVF MODE
L :LCD MODE

IC4201
DRIVER
IC4201
CXA3289BR-T4

IC4202
TIMING GENERATOR
IC4202
CXD3501AR-T4

CN4201 20P

20	EP_4.6V
19	D_2.8V
18	LED_DA
17	XEVF_TALLY_LED
16	LED_ON/OFF
15	EVF_GND
14	COM
13	VG
12	VR
11	VB
10	BLK
9	HCK1
8	HCK2
7	HST
6	EN
5	STB
4	VCK
3	VST
2	EVF_GND
1	EVF_VDD

TO LB-085 BOARD CN5601 (THROUGH THE FP-619 FLEXIBLE)

(PAGE 4-10)

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

For Schematic Diagram

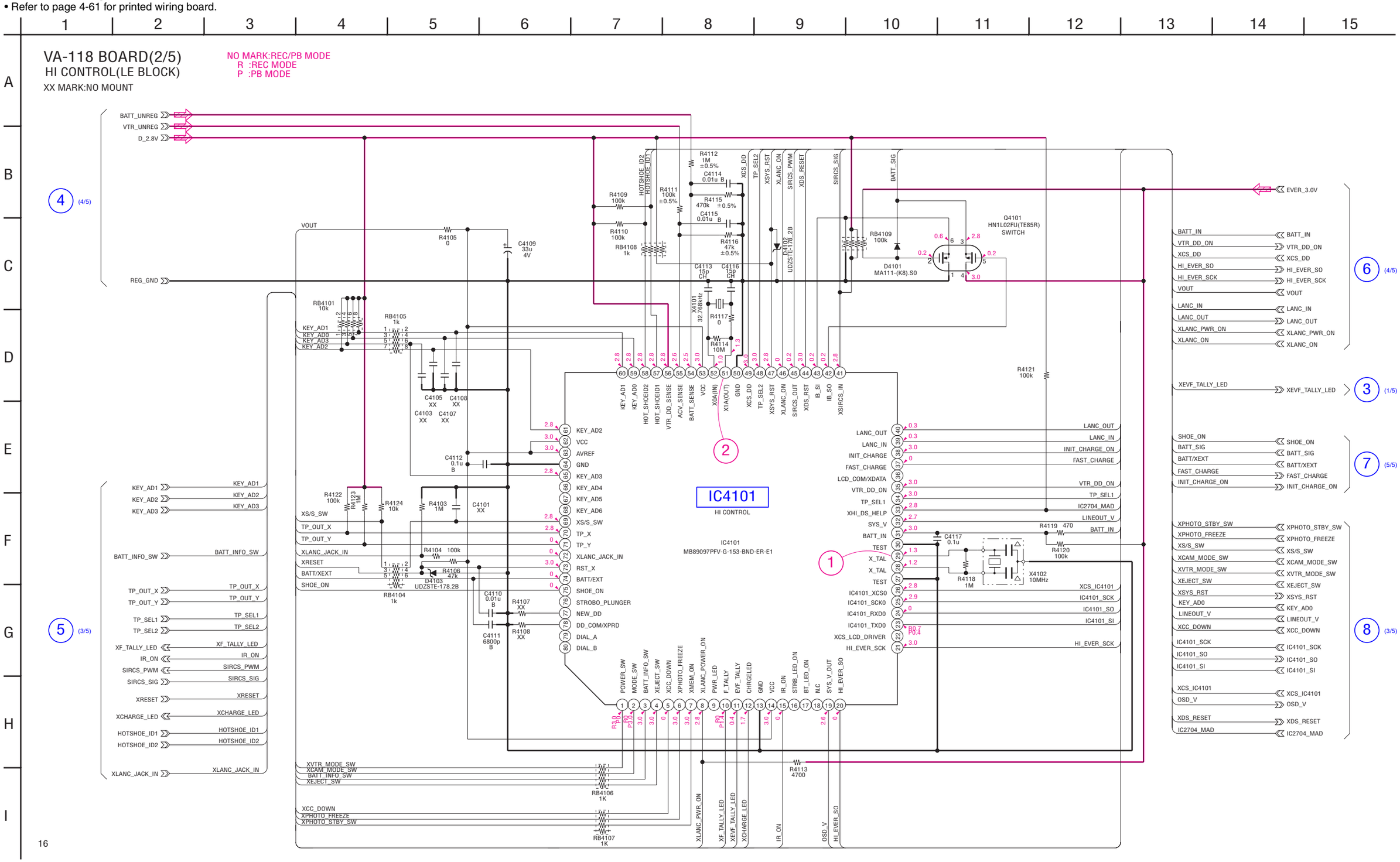
• Refer to page 4-61 for printed wiring board.

VA-118 BOARD(2/5)

HI CONTROL(LE BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



For Schematic Diagram

• Refer to page 4-61 for printed wiring board.

VA-118 BOARD(3/5)

Y/P SENSOR AMP,CONNECTOR(SE,CN BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		➡
PB	⇨	⇨		⇨

SIGNAL PATH

	REC	REC/PB	PB
Drum servo (speed and phase)		➡	
Capstan servo (speed and phase)		➡	

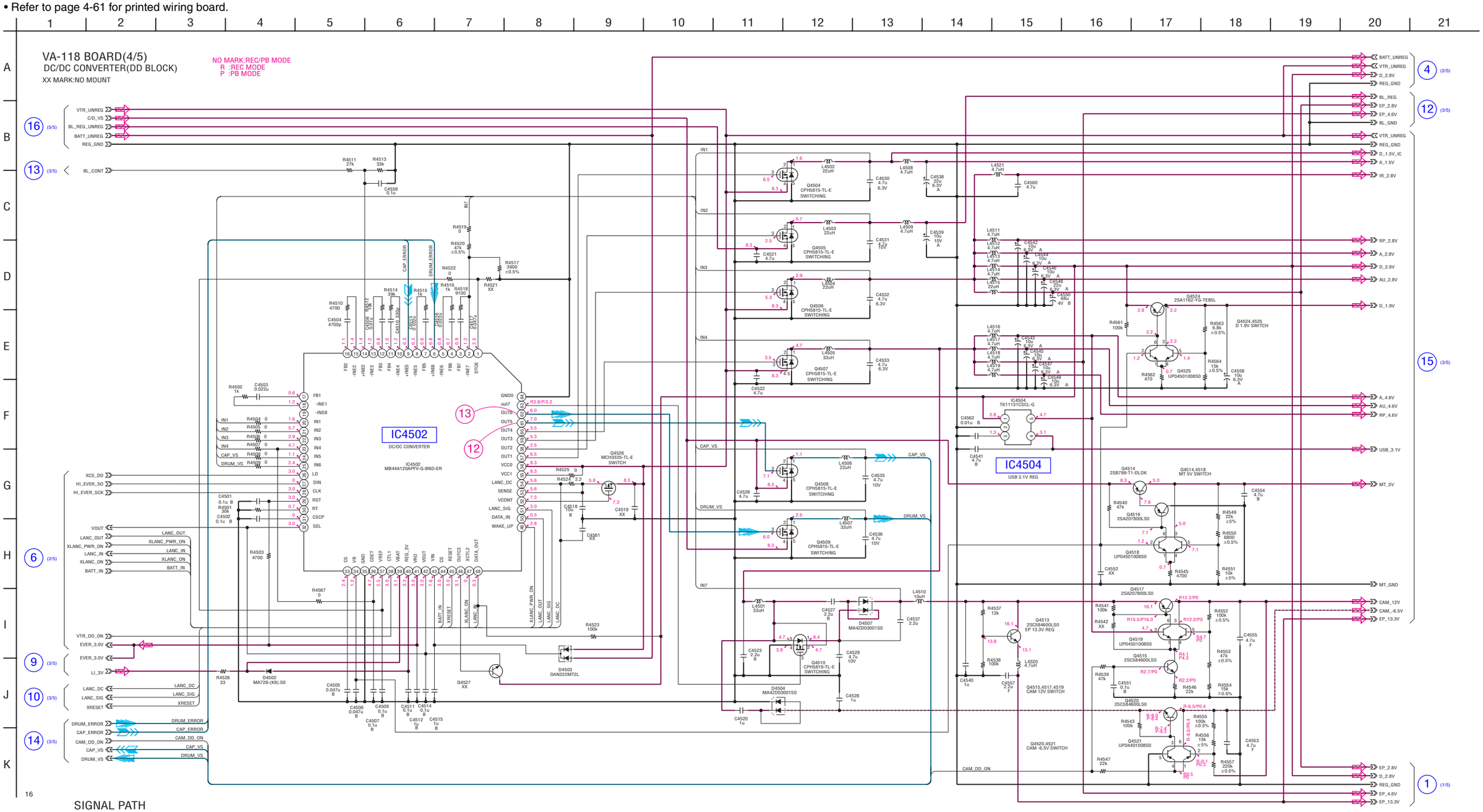
FP-620 FLEXIBLE is replaced as a block.
So that this PRINTED WIRING BOARD is omitted.

COVER

4-2. SCHEMATIC DIAGRAMS — VA-118 BOARD SIDE A — VA-118 BOARD SIDE B

For Schematic Diagram

• Refer to page 4-61 for printed wiring board.

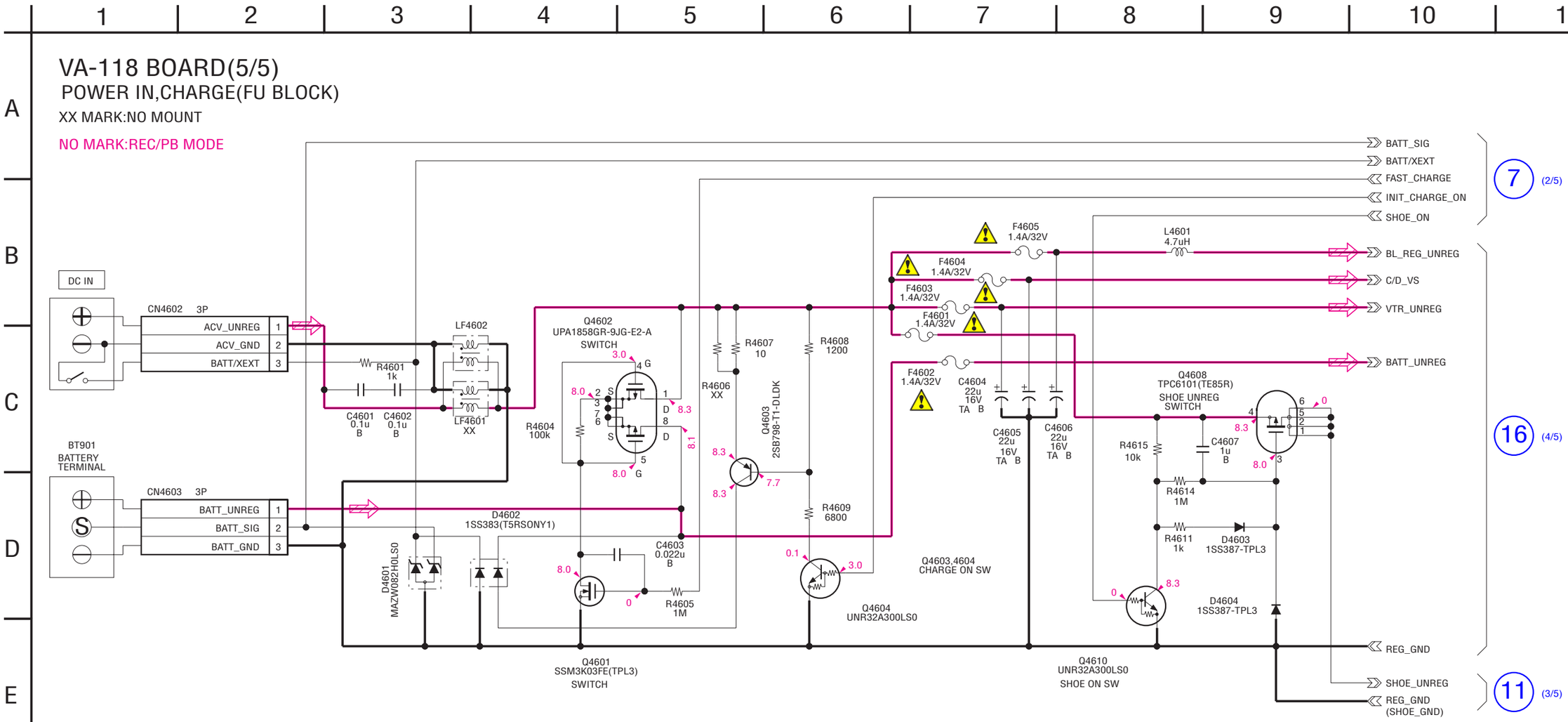


SIGNAL PATH

	REC	REC/PB	PB
Drum servo (speed and phase)		▶	
Capstan servo (speed and phase)		▶▶	

For Schematic Diagram

• Refer to page 4-61 for printed wiring board.

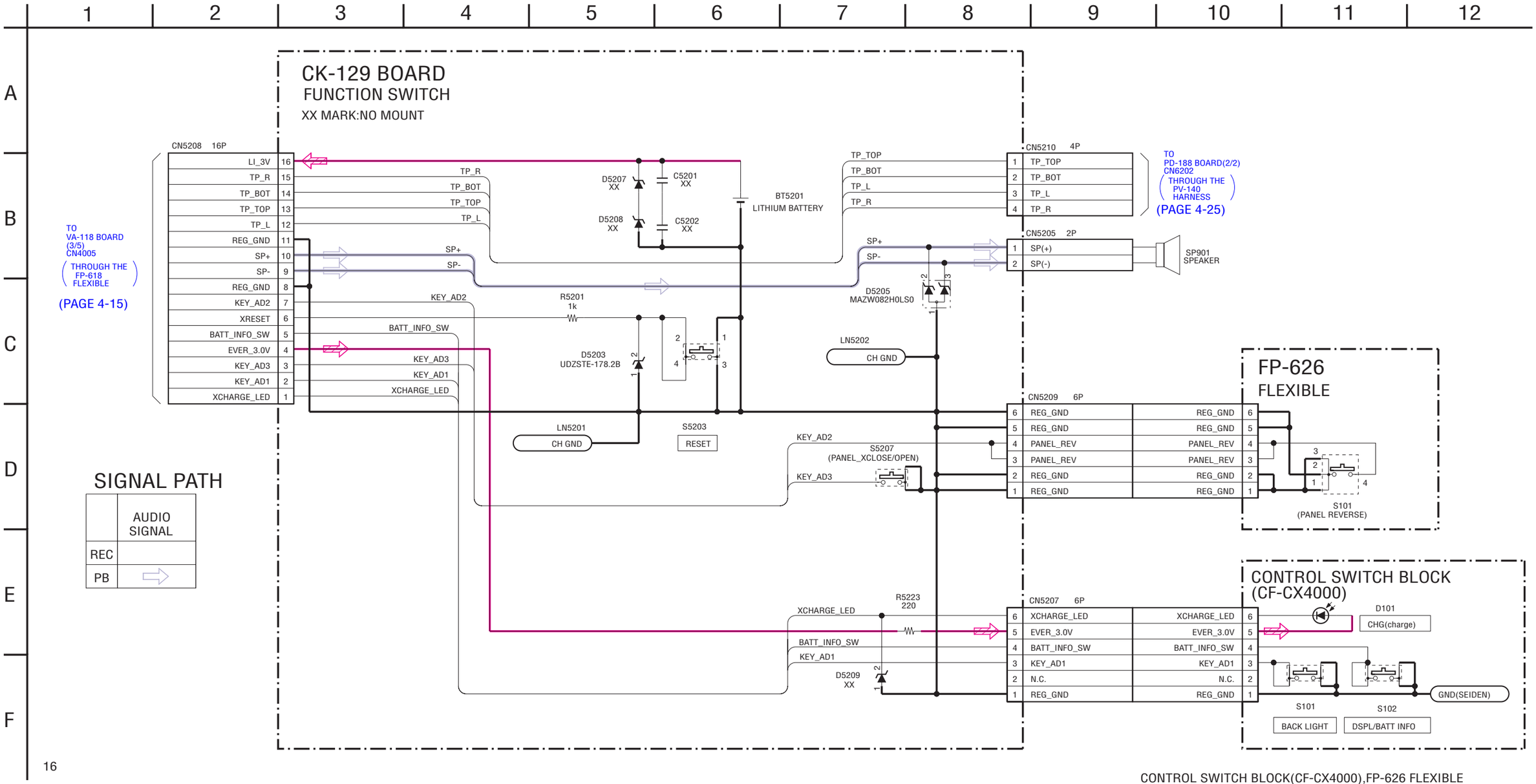


Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

For Schematic Diagram

• Refer to page 4-65 for printed wiring board.



CONTROL SWITCH BLOCK(CF-CX4000),FP-626 FLEXIBLE are replaced as a block.
So that this PRINTED WIRING BOARD is omitted.

For Schematic Diagram

• Refer to page 4-67 for printed wiring board.

PD-188 BOARD(1/2)
DRIVER,TG(RGB/TG BLOCK)
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

IC6001
DRIVER
IC6001
CXA3289BR-T4

IC6002
TIMING GENERATOR
IC6002
CXD3512R-T4

LCD901
2.5INCH
COLOR LCD
UNIT
(with Touch
PANEL)

CN6001 24P

24	TEST1
23	COM
22	VST
21	VCK
20	EN
19	DWN
18	VDD
17	VSS
16	VDOG
15	VVSSG
14	CS
13	WIDE
12	HST
11	REF
10	SOUT
9	CRext
8	HCK2
7	HCK1
6	PSIG
5	G
4	R
3	B
2	RGT
1	TEST2

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

For Schematic Diagram

• Refer to page 4-67 for printed wiring board.

PD-188 BOARD(2/2)

BACKLIGHT DRIVE(BL BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

CN6201 20P

BL_GND	1
SE_GND	2
EP_13.3V	3
BL_REG	4
BL_CONT	5
EP_4.6V	6
EP_2.8V	7
REG_GND	8
PANEL_B	9
PANEL_G	10
PANEL_R	11
PANEL_VG	12
PSIG	13
XRST_VTR	14
VD_SCK	15
XCS_LCD	16
VD_SO	17
PANEL_XVD	18
PANEL_XHD	19
XHD_OUT	20

TO VA-118 BOARD (3/5) CN4003 (THROUGH THE PV-140 HARNESS)

(PAGE 4-16)

PANEL_B, PANEL_G, PANEL_R, PANEL_VG, PSIG, XRST_VTR, VD_SCK, XCS_LCD, VD_SO, PANEL_XVD, PANEL_XHD, XHD_OUT

1 (1/2) — EP_13.3V, EP_2.8V, REG_GND

2 (1/2) — PANEL_B, PANEL_G, PANEL_R, PANEL_VG, PSIG, XRST_VTR, VD_SCK, XCS_LCD, VD_SO, PANEL_XVD, PANEL_XHD, XHD_OUT

3 (1/2)

L6101 82uH

C6101 4.7u B

R6106 1800 1/10W

C6103 0.015u B

T6101 INVERTER TRANSFORMER

C6105 12p 3.15kV

CN6101 10P

10	BL_HIGH
9	N.C.
8	N.C.
7	N.C.
6	N.C.
5	N.C.
4	N.C.
3	BL_LOW
2	LED
1	LED_GND

ND901 BACKLIGHT

Q6102 CPH5504-TL-E SWITCHING

Q6103 XX

IC6102 CURRENT DETECT

IC6102 TA75S393F-TE85R

R6104 180k

R6105 22k

C6102 XX

R6101 XX

D6101 XX

LN6101 CH_GND

DETIN

R6109 XX

Q6104 XX

D6104 XX

D6103 MA111-(K8).S0

R6108 22k

C6104 0.1u B

R6110 470

R6102 XX

D6102 XX

R6103 10k

IC6101 TC7W53FU(TE12R)

COM, INH, VEE, GND, VCC, CH0, CH1, A

R6107 10k

IC6101 SELECT SWITCH

BL_ON

Q6101 UNR32A300LS0 INVERTER

DAC

LED

REG_GND

D6105 UDZSTE-178_2B

TO CK-129 BOARD CN5210 (THROUGH THE PV-140 HARNESS)

(PAGE 4-22)

CN6202 4P

TP_TOP	1
TP_BOT	2
TP_L	3
TP_R	4

TOUCH PANEL (included LCD panel)

CN6203 6P

TP_R	1
TP_L	2
N.C.	3
TP_BOT	4
TP_TOP	5
N.C.	6

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

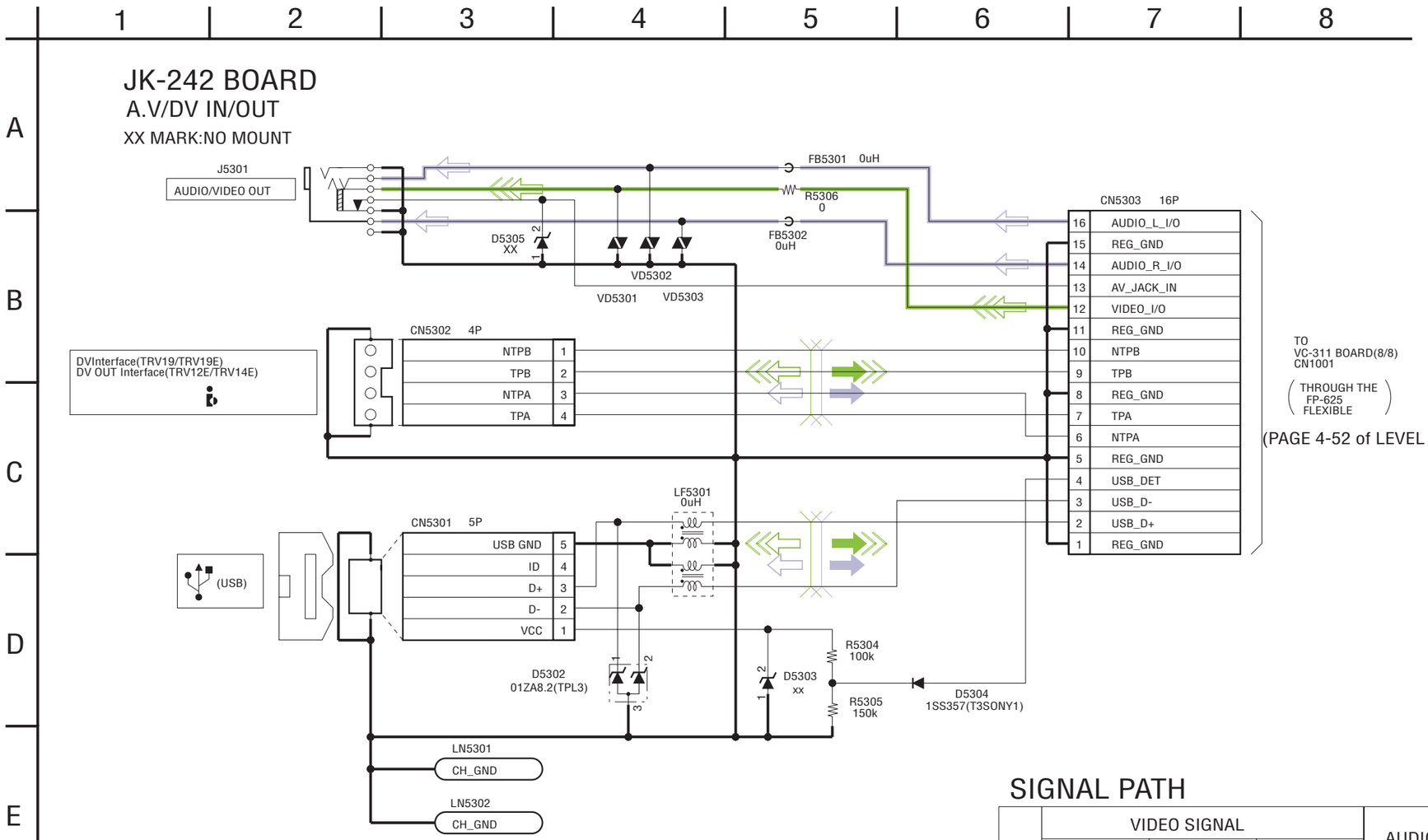
Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

For Schematic Diagram

• Refer to page 4-69 for printed wiring board.



SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			⇒	→
PB			⇨	⇨

1 2 3 4 5 6 7 8

A

B

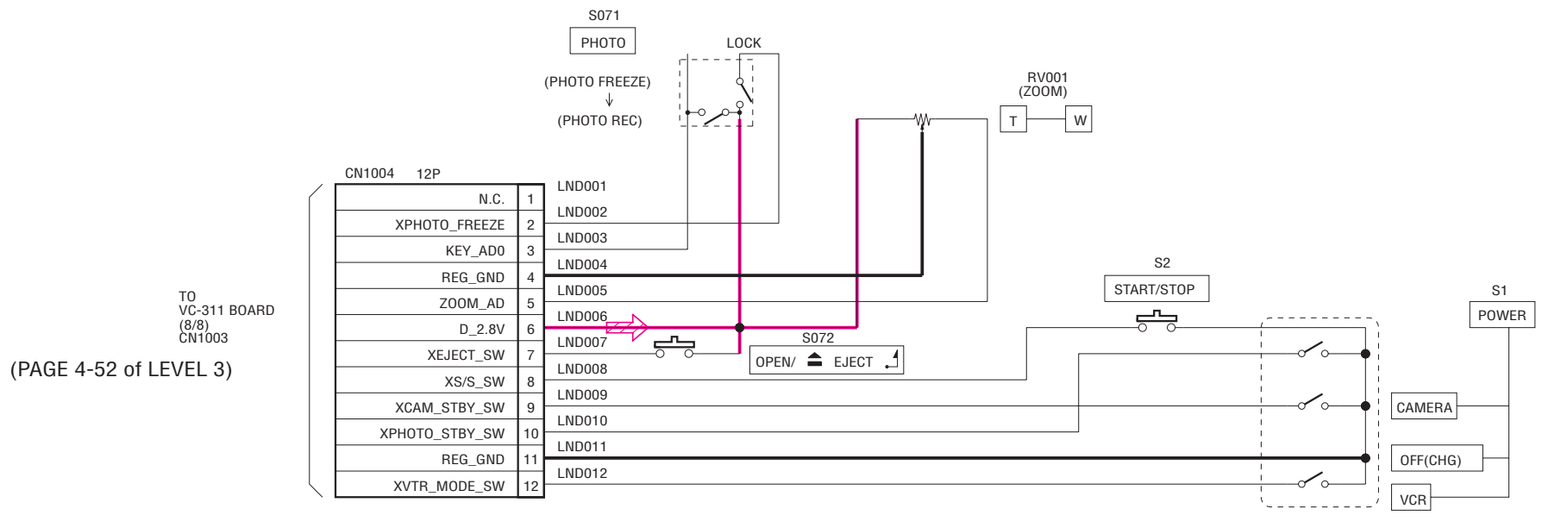
C

D

16

CONTROL SWITCH BLOCK
(FK-CX4000)

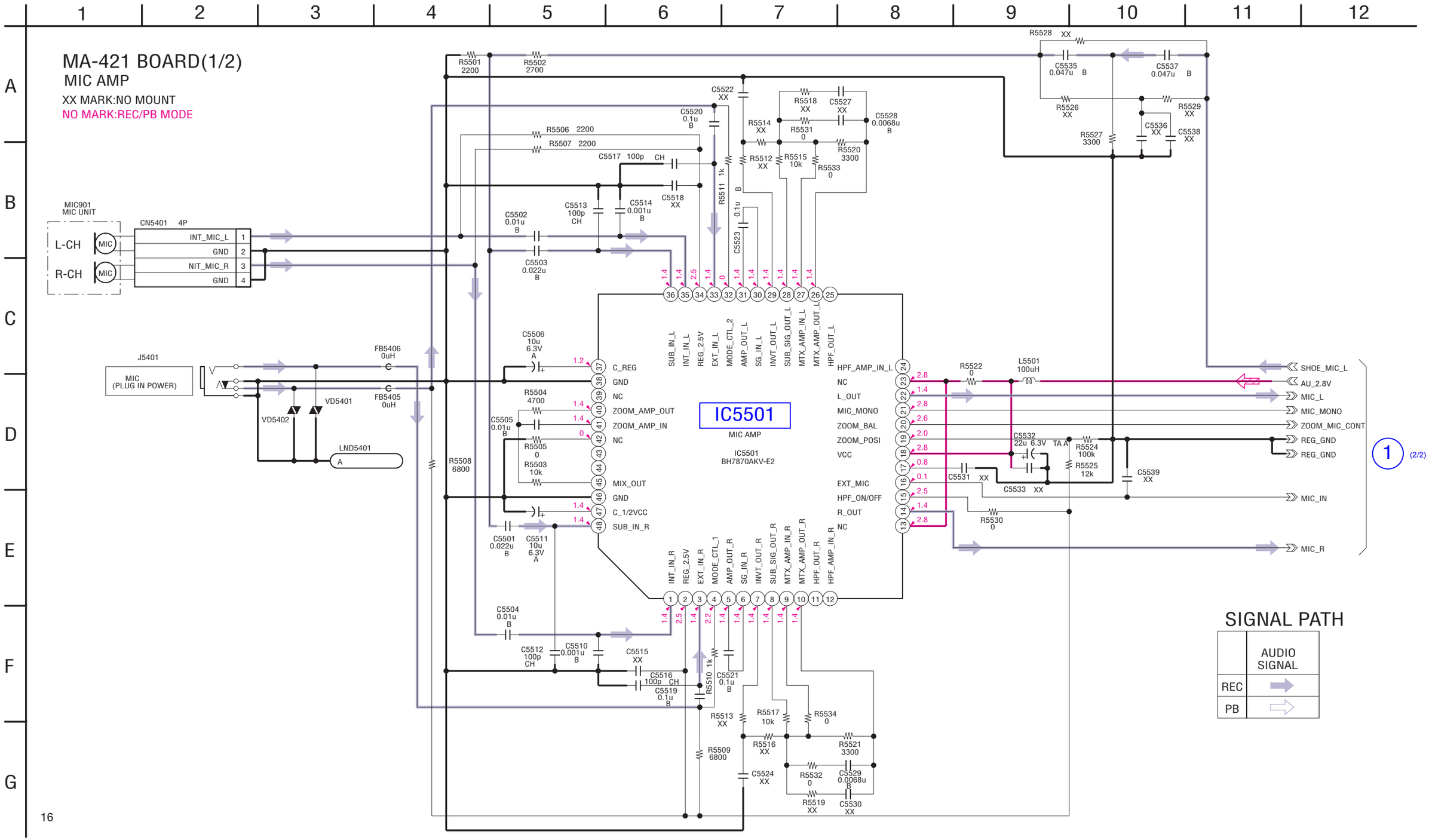
XX MARK:NO MOUNT



CONTROL SWITCH BLOCK(FK-CX4000) is replaced as a block.
So that these PRINTED WIRING BOARD are omitted.

For Schematic Diagram

• Refer to page 4-71 for printed wiring board.

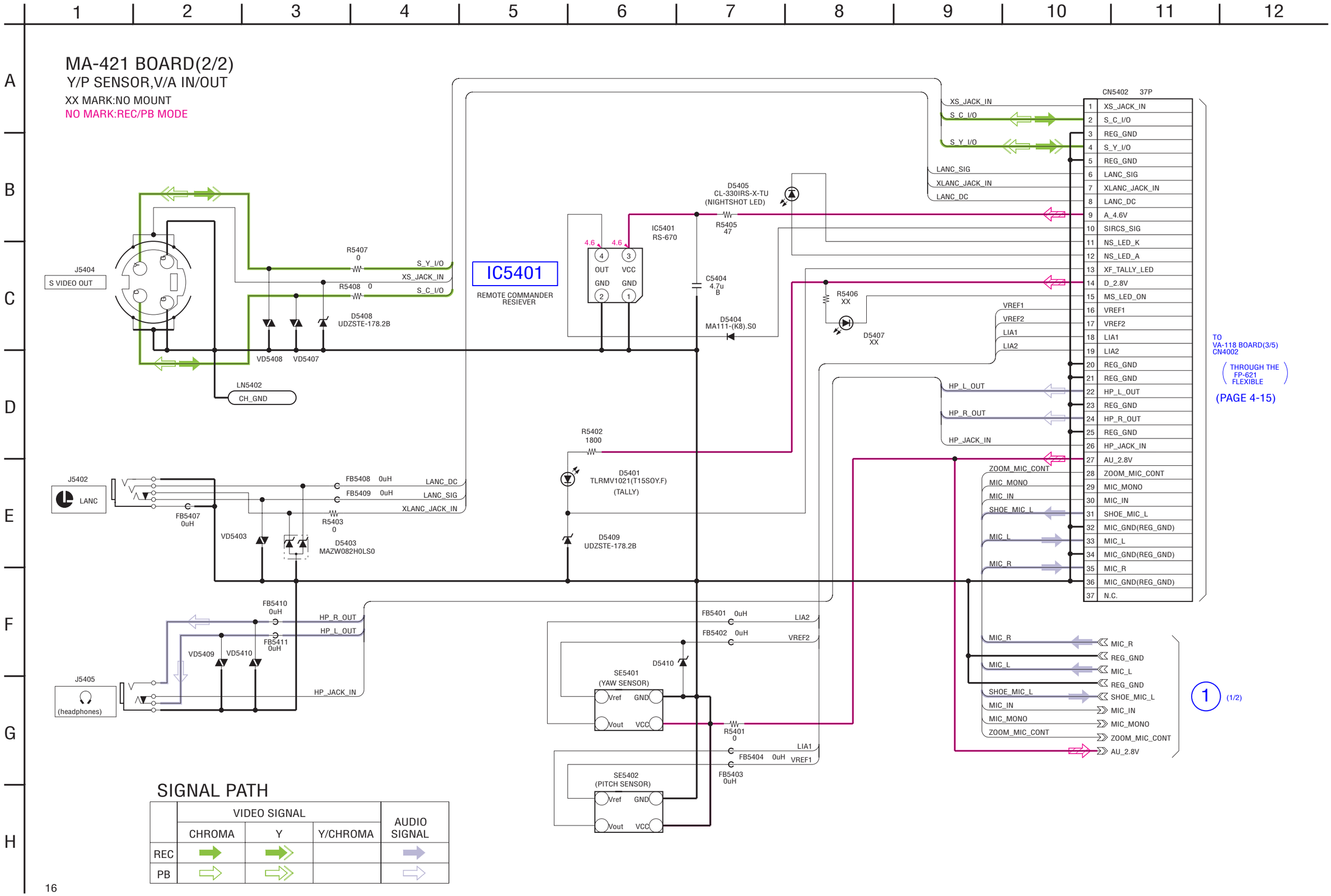


SIGNAL PATH

	AUDIO SIGNAL
REC	➡
PB	⇨

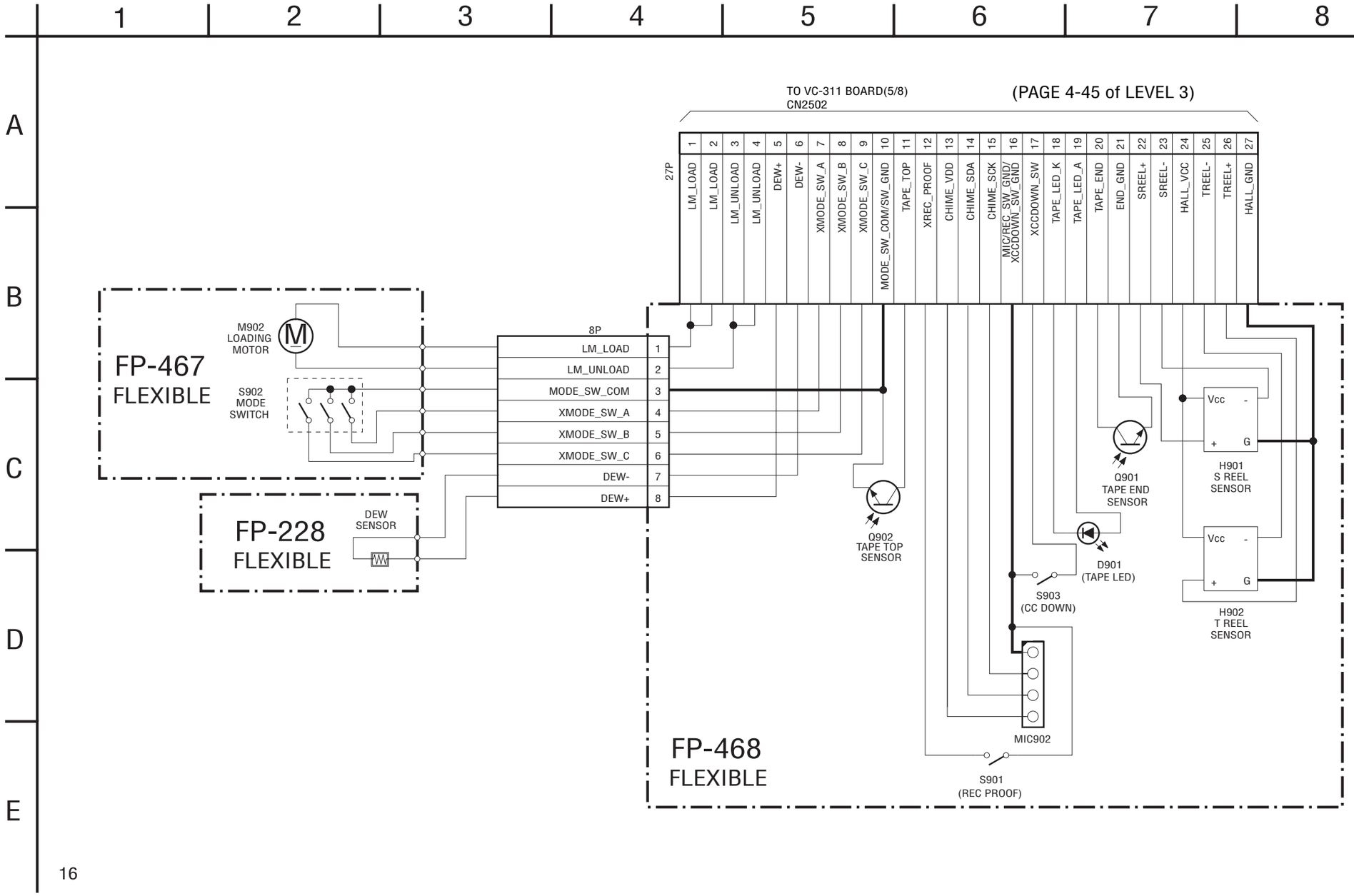
For Schematic Diagram

• Refer to page 4-71 for printed wiring board.



For Schematic Diagram

• Refer to page 4-59 for flexible wiring board.



Schematic diagram of the VC-311 board are not shown.
Pages from 4-37 to 4-52 are not shown.

COVER

4-3. PRINTED WIRING BOARDS

Link

- CD-430 BOARD
- VA-118 BOARD (SIDE B)
- LB-085 BOARD
- CK-129 BOARD
- FP-626 FLEXIBLE BOARD
- PD-188 BOARD
- FP-467/468/228 FLEXIBLE BOARD (MD BLOCK)
- JK-242 BOARD
- VA-118 BOARD (SIDE A)
- MA-421 BOARD

- COMMON NOTE FOR PRINTED WIRING BOARDS
- WAVEFORMS
- MOUNTED PARTS LOCATION
- CIRCUIT BOARDS LOCATION
- FLEXIBLE BOARDS LOCATION

COVER

4-3. PRINTED WIRING BOARDS

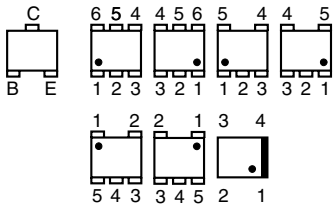
THIS NOTE IS COMMON FOR WIRING BOARDS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

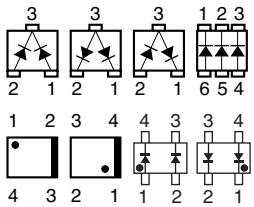
- : Uses unleaded solder.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



Diode



BOARD INFORMATION

board name	parts location (shown on page)	waveform (shown on page)	pattern		CSP IC
			number of layers	layers not shown	
CD-430	4-81	4-77	6	2 to 5	–
LB-085	4-81	–	6	2 to 5	–
FP-626 FLEXIBLE	–	–	1	–	–
VA-118	4-81	4-77	6	2 to 5	–
CK-129	4-82	–	6	2 to 5	–
PD-188	4-82	4-78	6	2 to 5	–
JK-242	4-82	–	6	2 to 5	–
MA-421	4-82	–	6	2 to 5	–
VC-311	4-83	4-79	8	2 to 7	IC2103

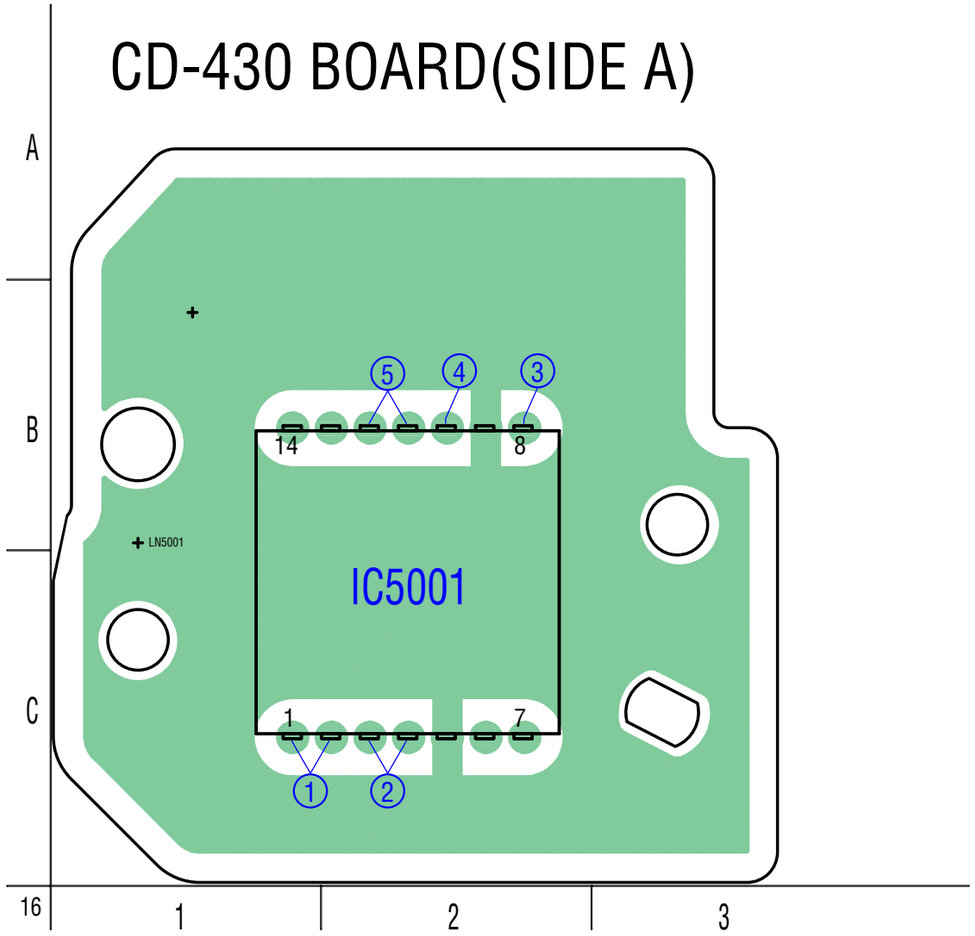
4-3. PRINTED WIRING BOARDS

CD-430 (CCD IMAGER) PRINTED WIRING BOARD

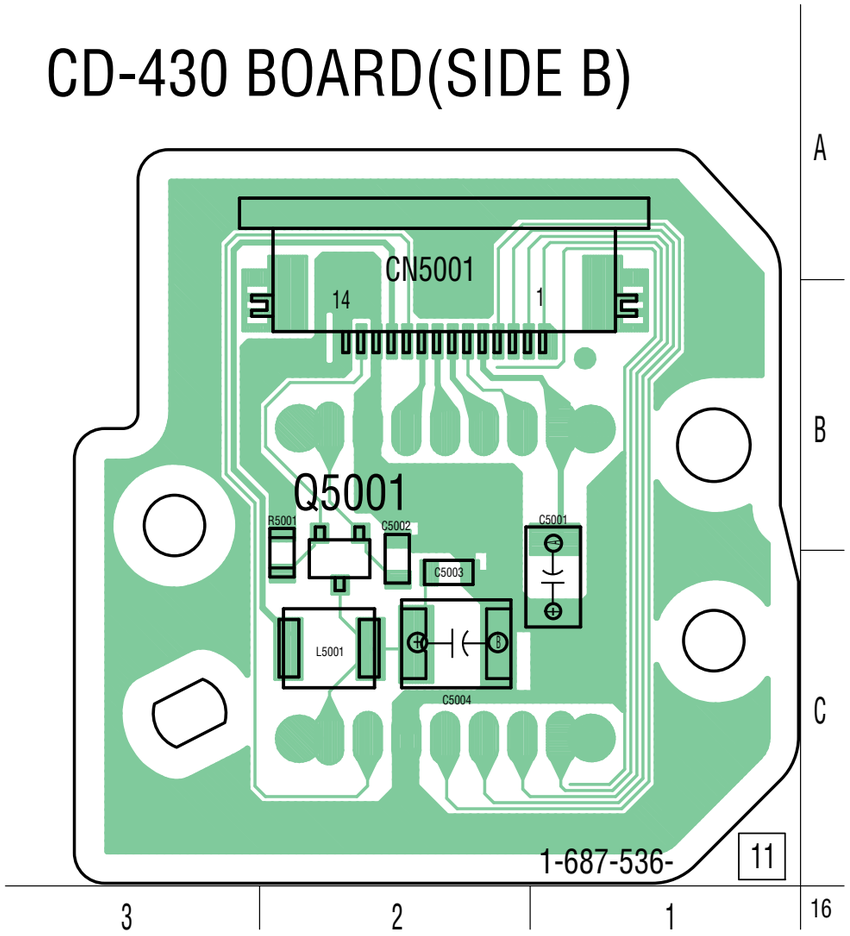
• Refer to page 4-53 for common note for printed wiring board.

• : Uses unleaded solder.

CD-430 BOARD(SIDE A)



CD-430 BOARD(SIDE B)

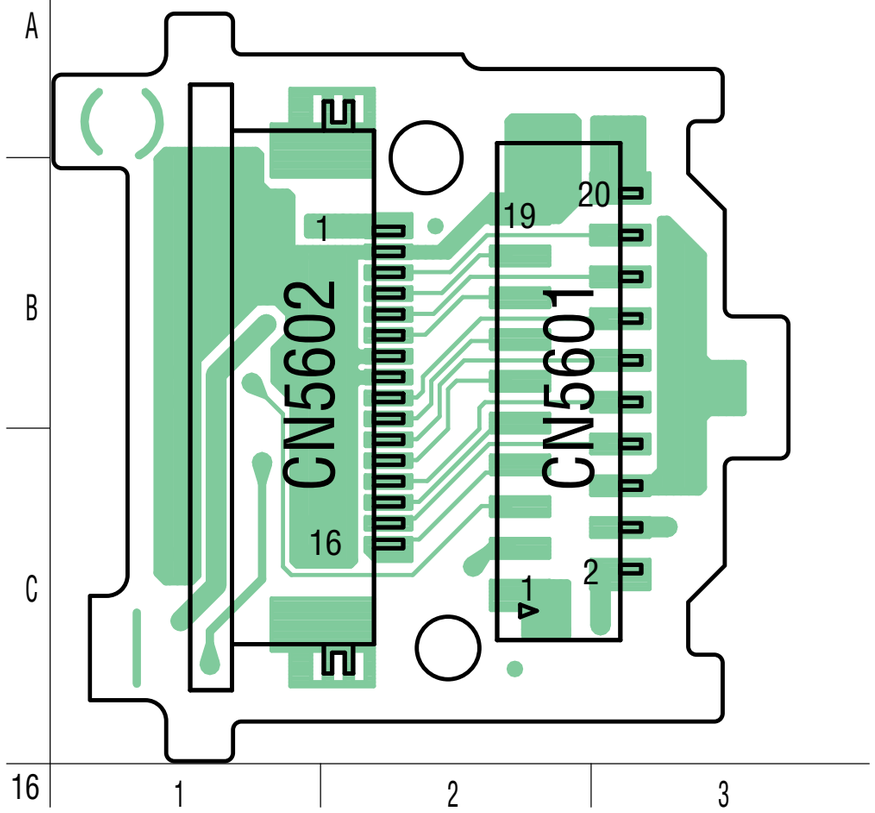


LB-085 (EVF, BACK LIGHT) PRINTED WIRING BOARD

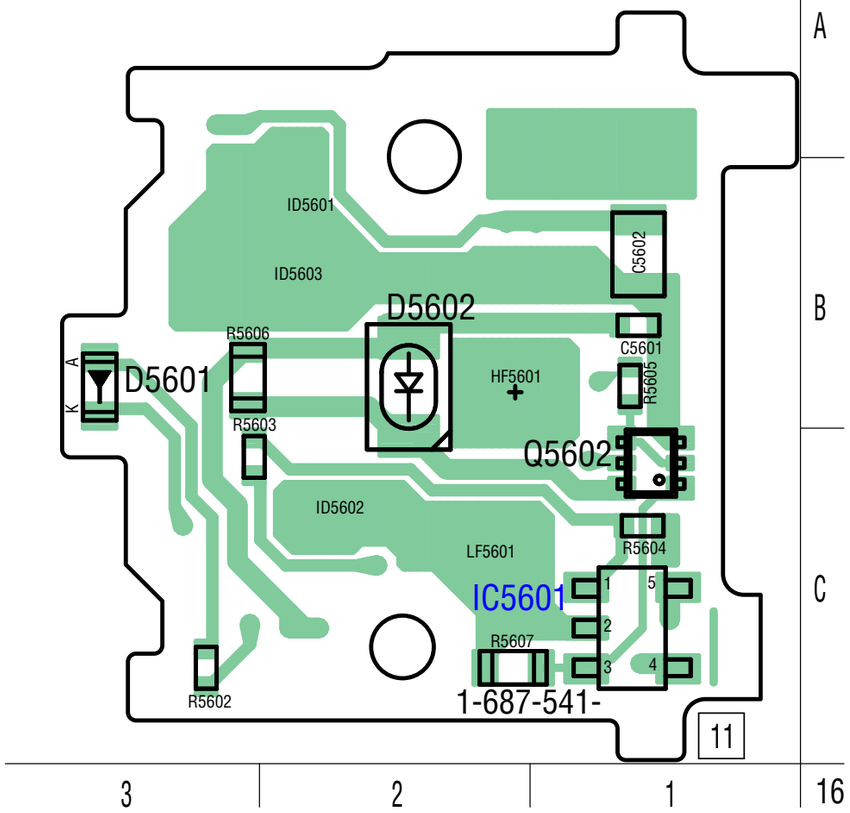
• Refer to page 4-53 for common note for printed wiring board.

• : Uses unleaded solder.

LB-085 BOARD (SIDE A)



LB-085 BOARD (SIDE B)

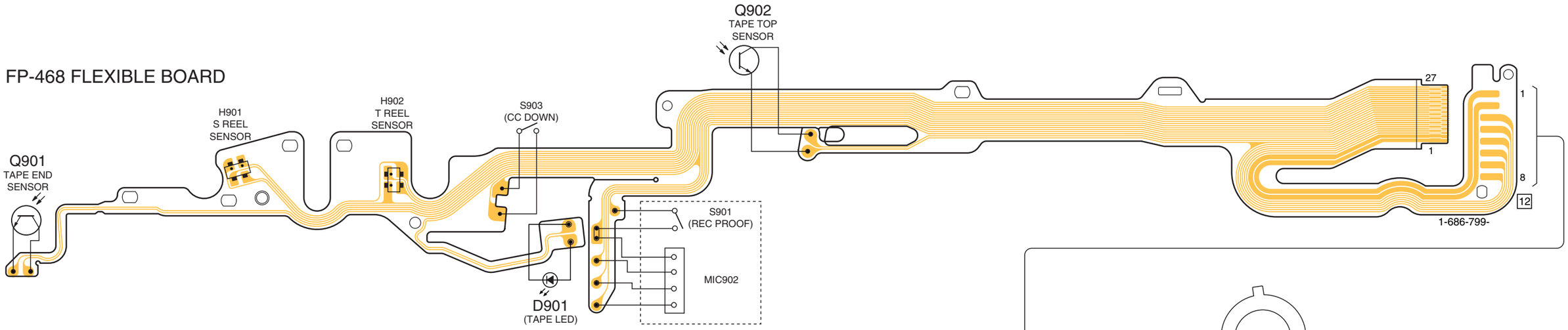


FP-467/468/228 FLEXIBLE WIRING BOARD (MD BLOCK)
FP-626 FLEXIBLE WIRING BOARD

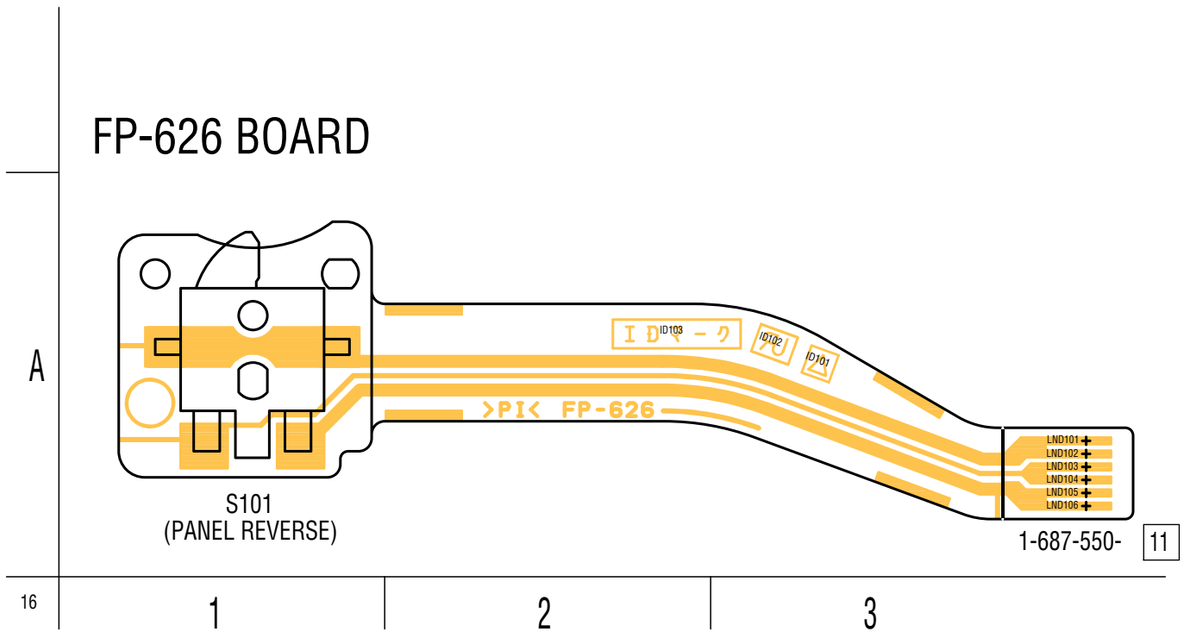
• Refer to page 4-53 for common note for printed wiring board.

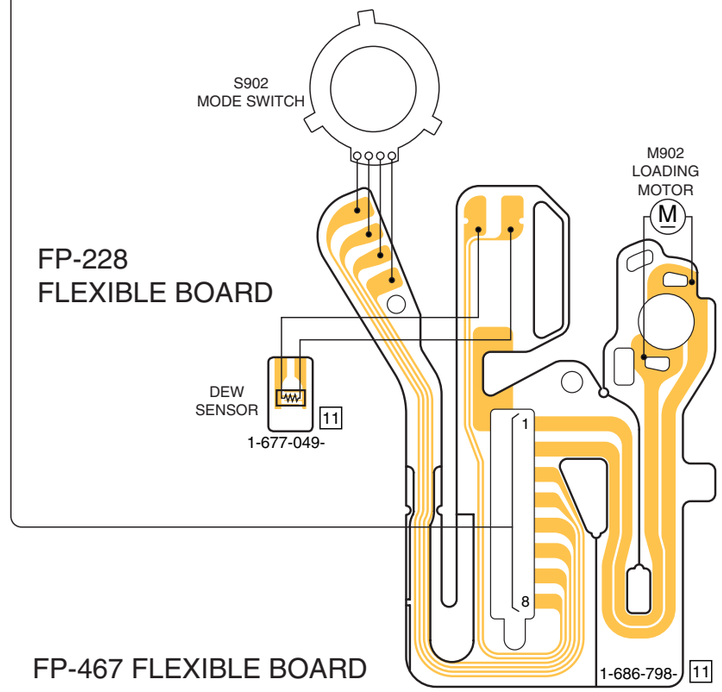
• : Uses unleaded solder.

FP-468 FLEXIBLE BOARD



FP-626 BOARD



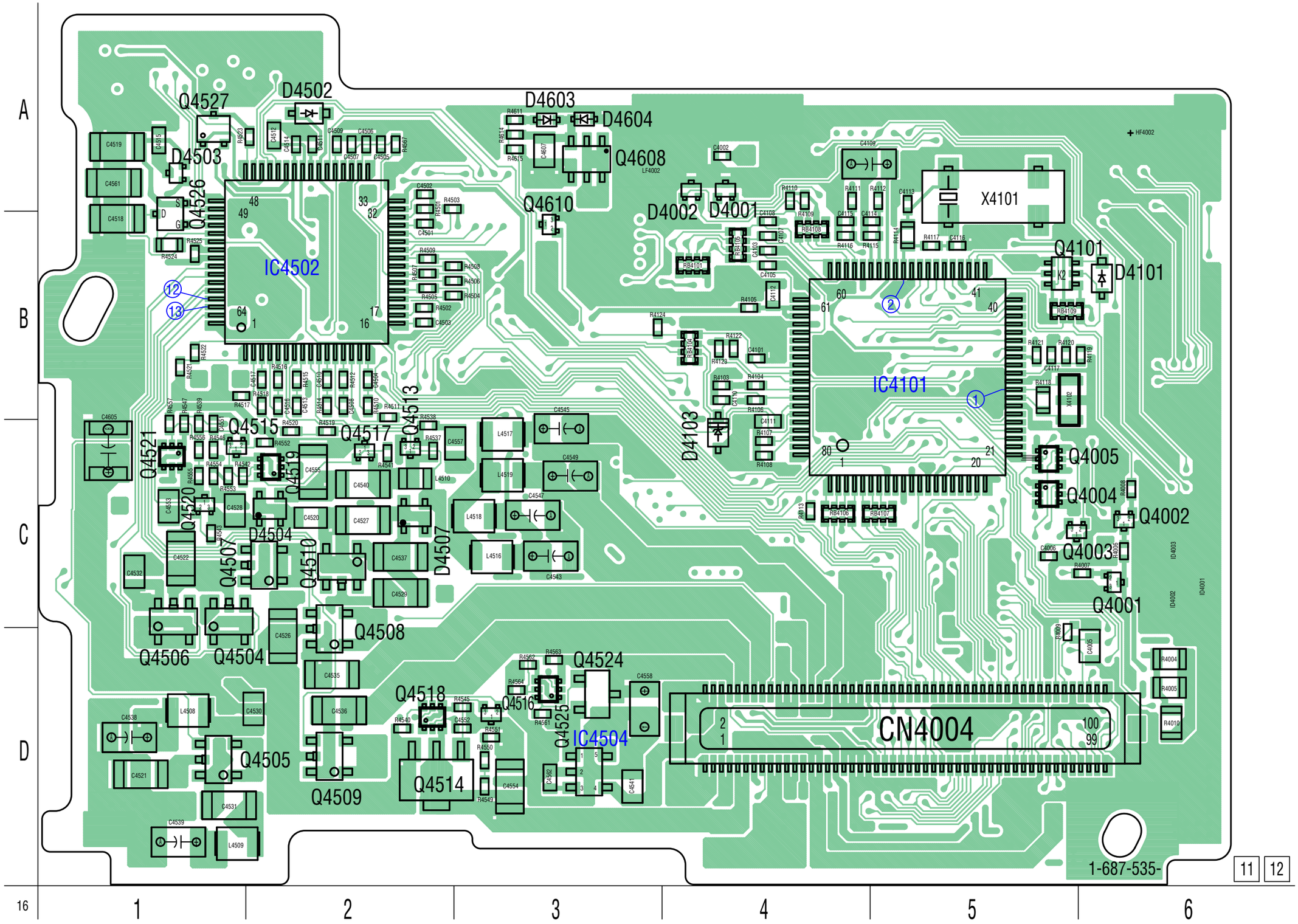


VA-118 (RGB DRIVE, TG, HI CONTROL, Y/P SENSOR AMP, CONNECTOR, DC/DC COVERTER, POWER IN, CHARGE) PRINTED WIRING BOARD

• Refer to page 4-53 for common note for printed wiring board.

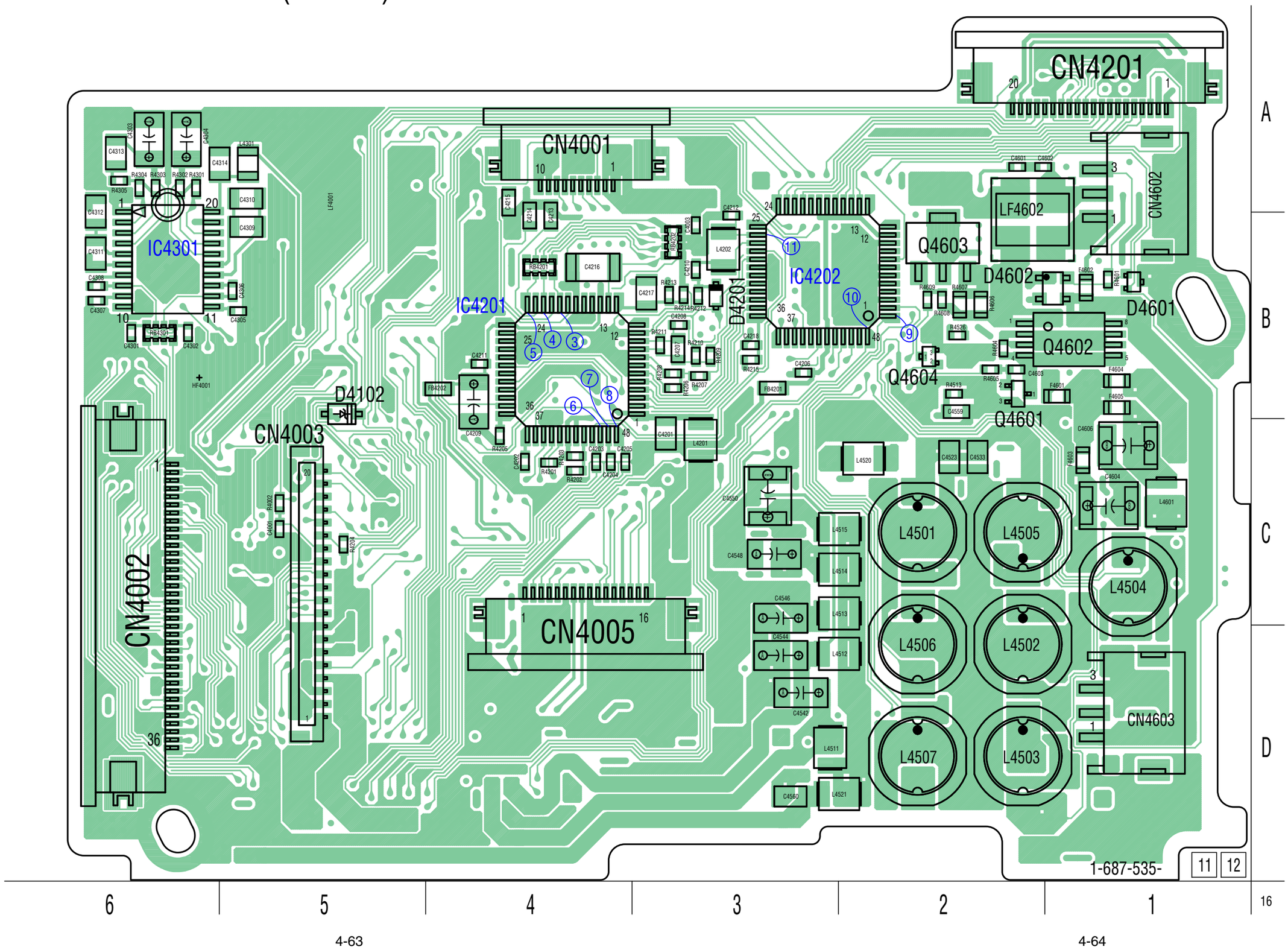
• : Uses unleaded solder.

VA-118 BOARD(SIDE A)



• Refer to page 4-53 for common note for printed wiring board. • : Uses unleaded solder.

VA-118 BOARD(SIDE B)

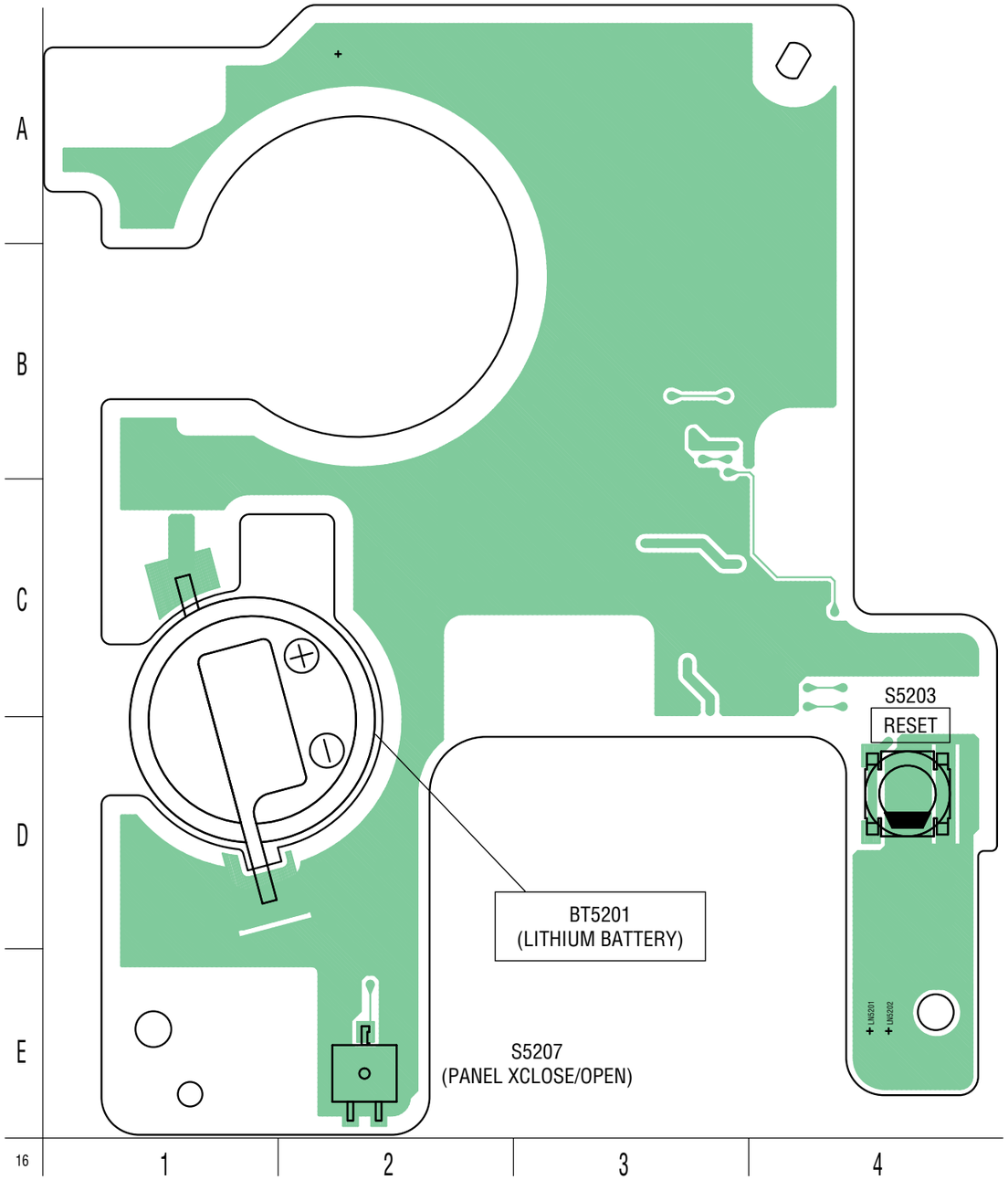


CK-129 (FUNCTION SWITCH) PRINTED WIRING BOARD

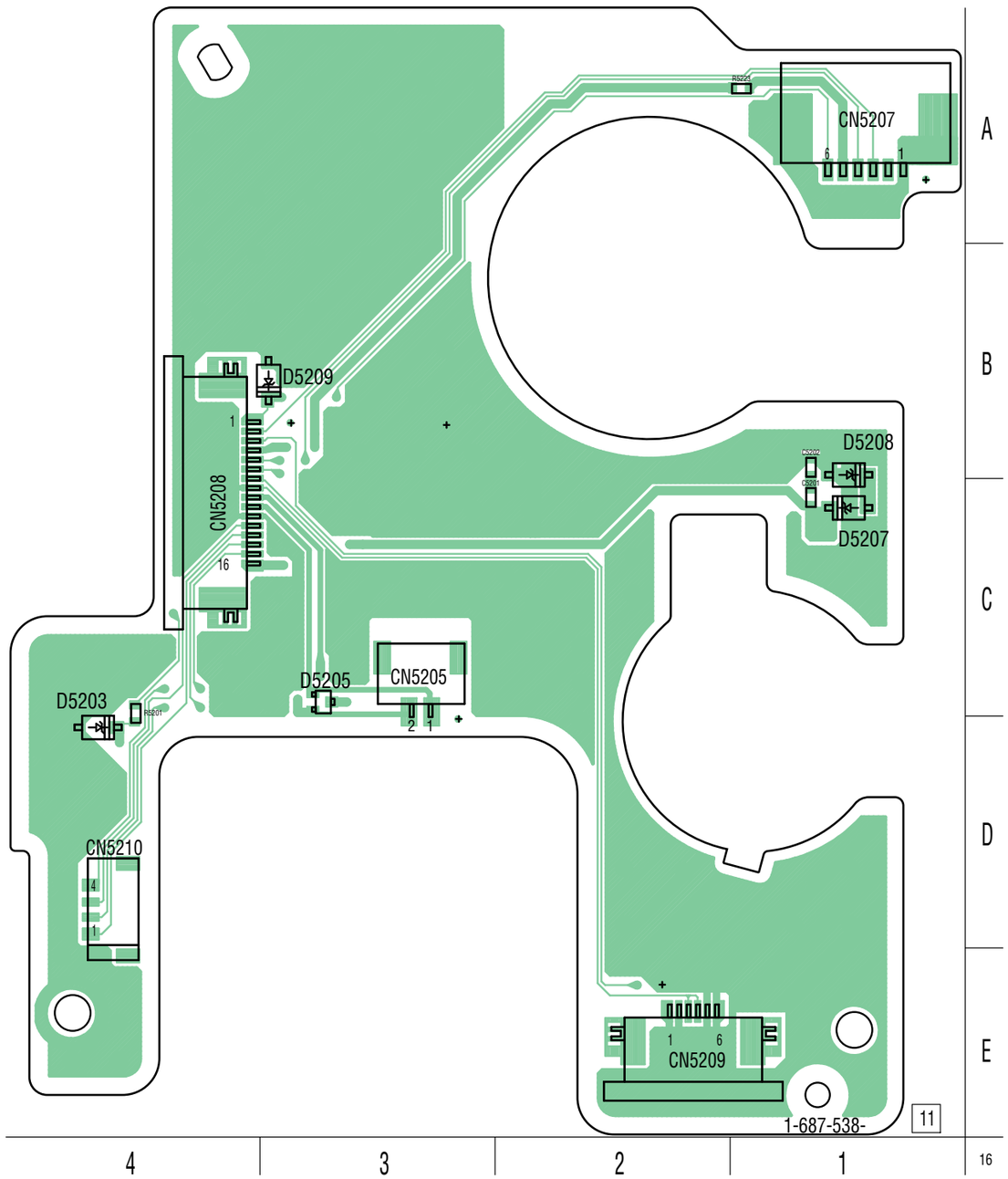
• Refer to page 4-53 for common note for printed wiring board.

• : Uses unleaded solder.

CK-129 BOARD(SIDE A)



CK-129 BOARD(SIDE B)



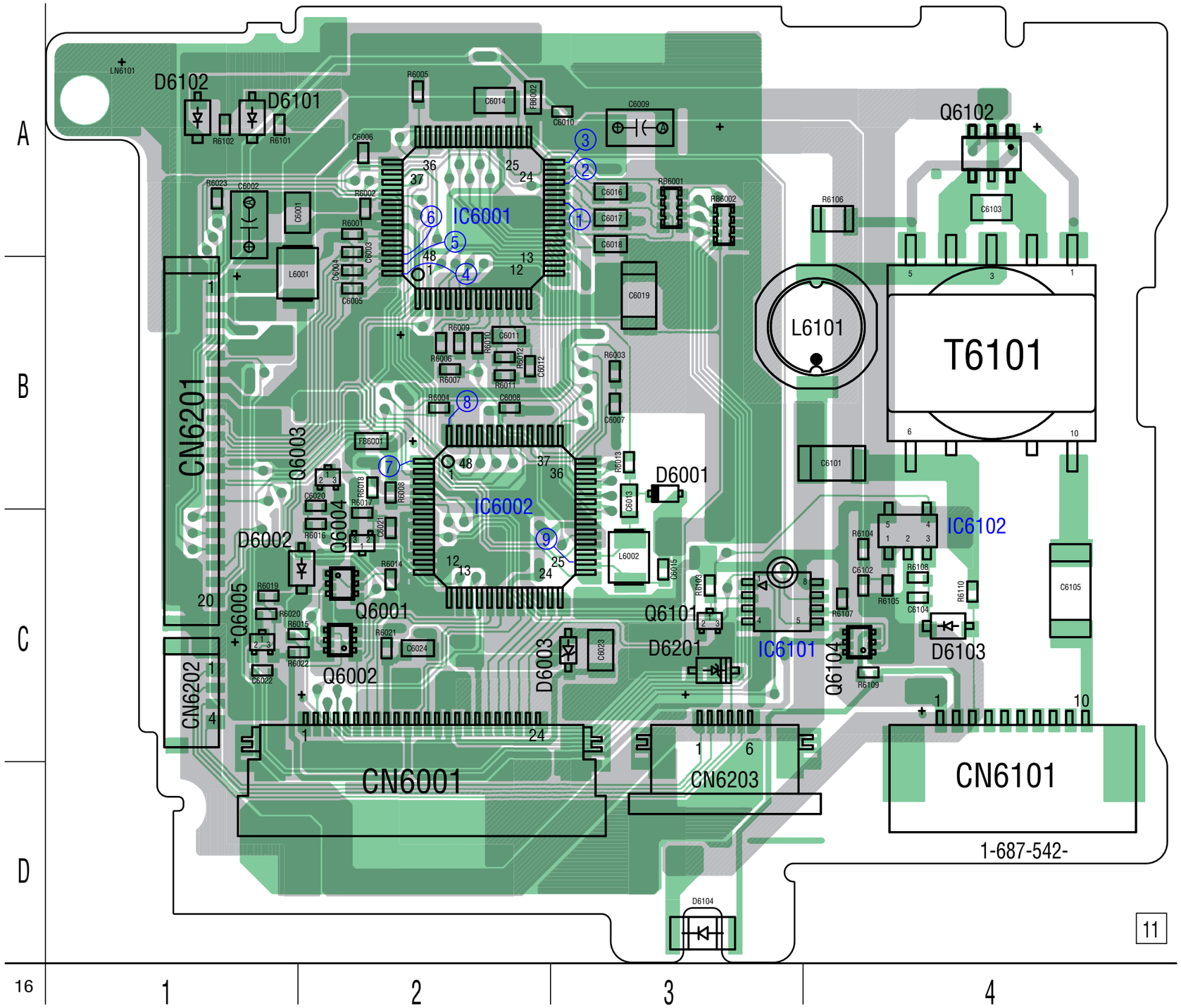
CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

PD-188 (DRIVER, TG, BACKLIGHT DRIVE) PRINTED WIRING BOARD

• Refer to page 4-53 for common note for printed wiring board.

• : Uses unleaded solder.

PD-188 BOARD

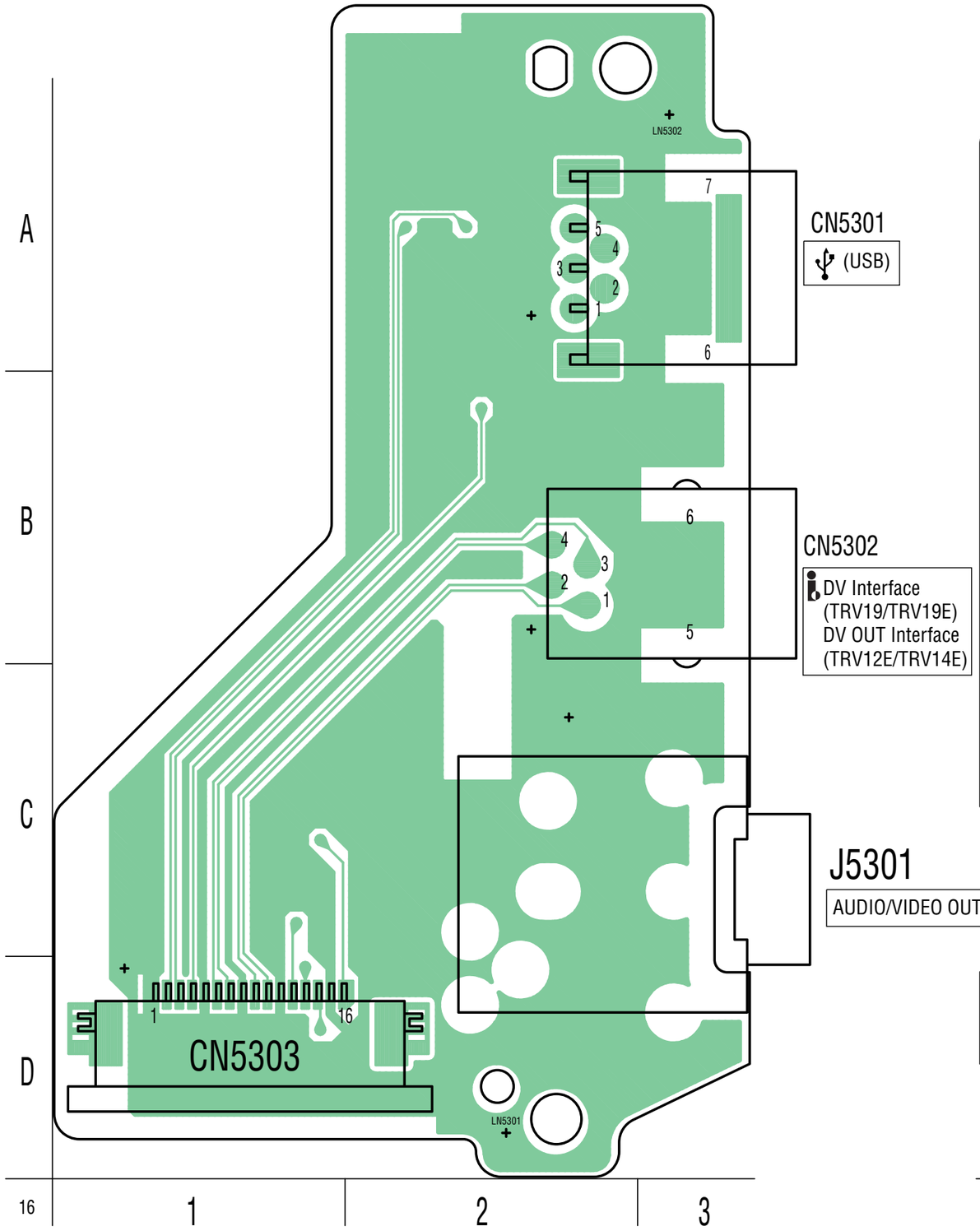


JK-242 (A.V/DV IN/OUT) PRINTED WIRING BOARD

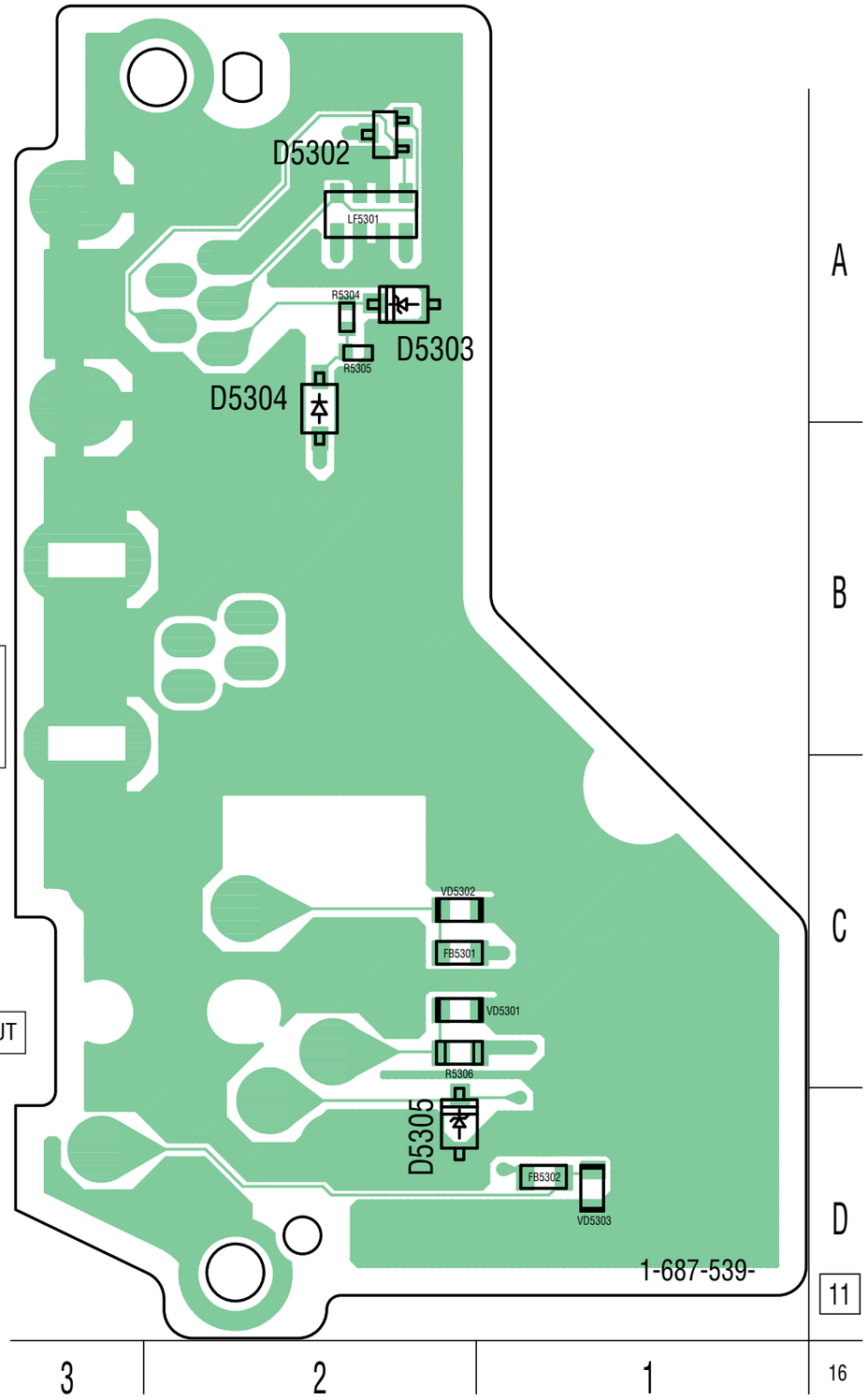
• Refer to page 4-53 for common note for printed wiring board.

• : Uses unleaded solder.

JK-242 BOARD(SIDE A)



JK-242 BOARD(SIDE B)

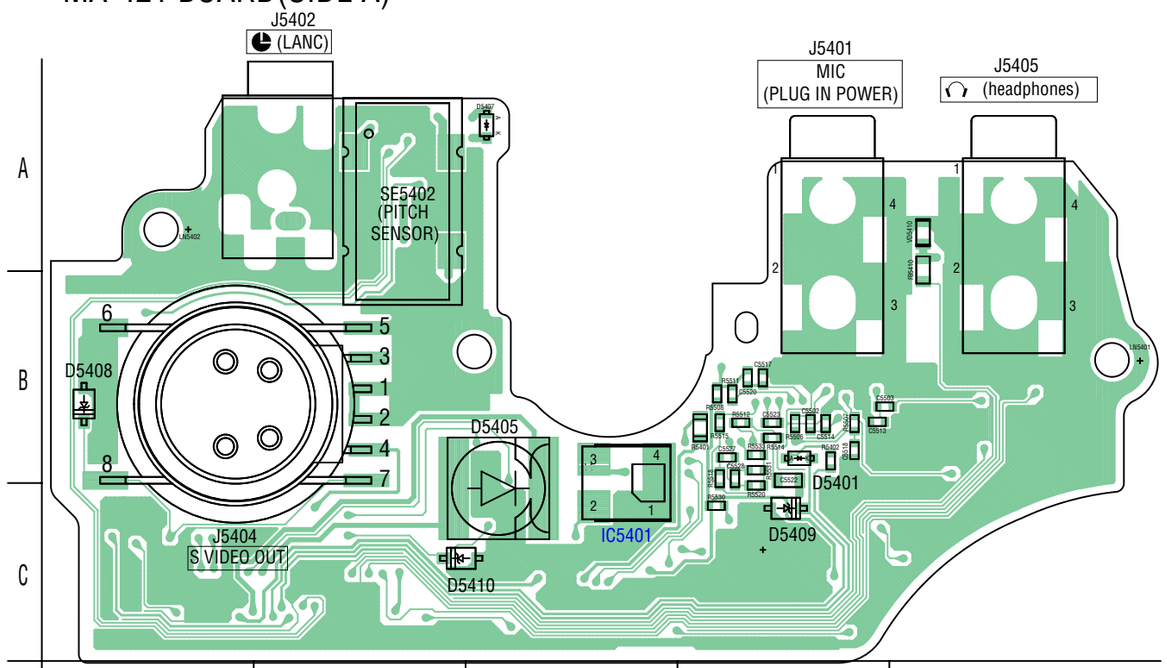


MA-421 (MIC AMP, Y/P SENSOR, V/A IN/OUT) PRINTED WIRING BOARD

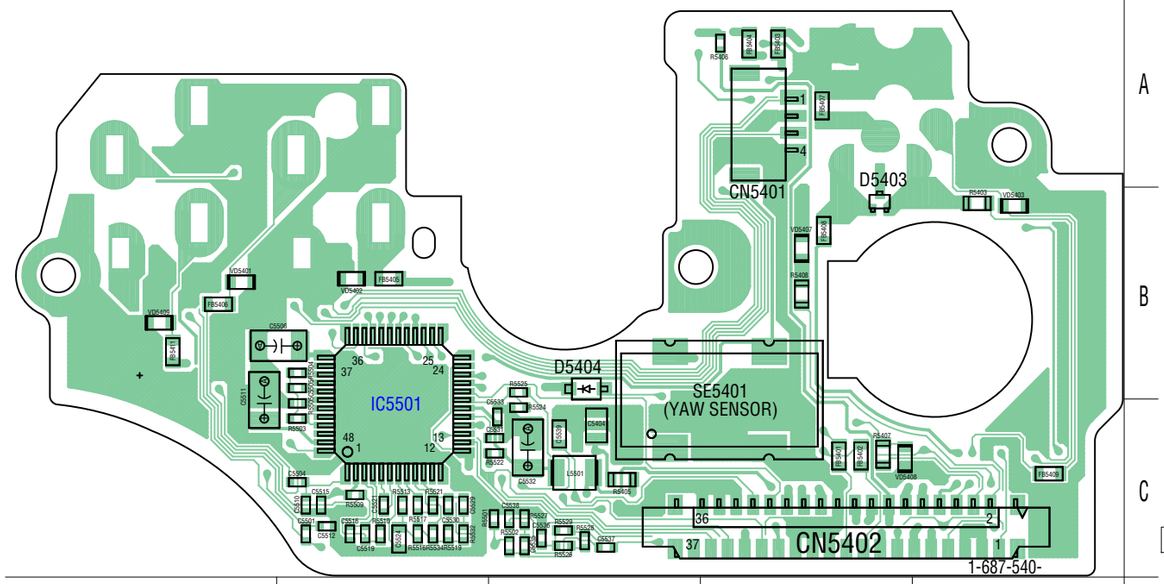
• Refer to page 4-53 for common note for printed wiring board.

• : Uses unleaded solder.

MA-421 BOARD(SIDE A)



MA-421 BOARD(SIDE B)

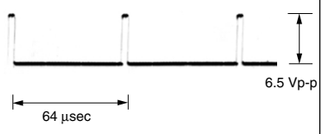


Printed wiring board of the VC-311 board are not shown.
Pages from 4-73 to 4-76 are not shown.

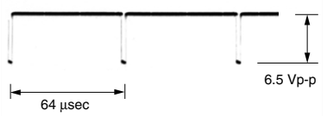
4-4. WAVEFORMS

CD-430 BOARD CAMERA REC

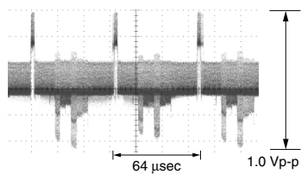
① IC5001 ①,②



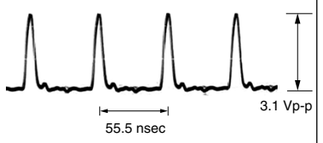
② IC5001 ③,④



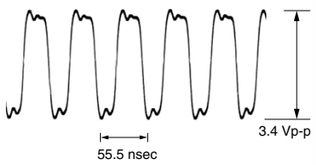
③ IC5001 ⑧



④ IC5001 ⑩

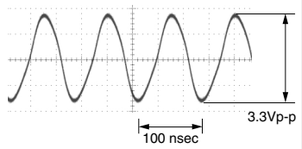


⑤ IC5001 ⑪,⑫

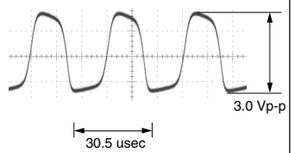


VA-118 BOARD

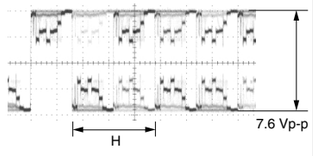
① IC4101 ㉙
REC/PB



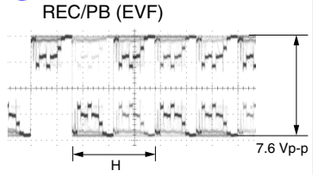
② IC4101 ㊶
REC/PB



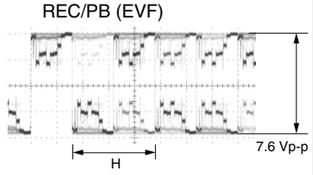
③ IC4201 ⑳
REC/PB (EVF)



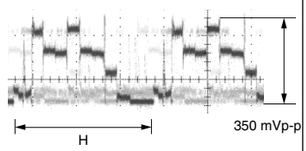
④ IC4201 ㉒
REC/PB (EVF)



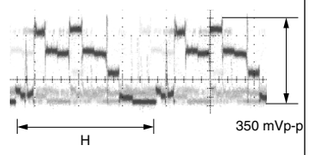
⑤ IC4201 ㉔
REC/PB (EVF)



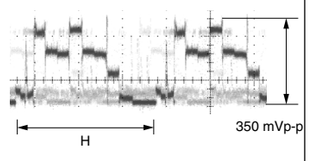
⑥ IC4201 ㊻
REC/PB (EVF)



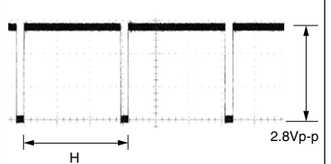
⑦ IC4201 ㊼
REC/PB (EVF)



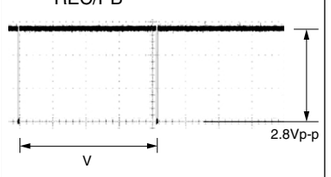
⑧ IC4201 ㊽
REC/PB (EVF)



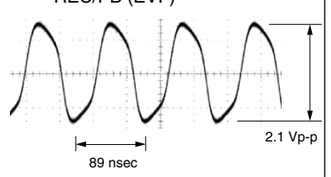
⑨ IC4202 ①
REC/PB



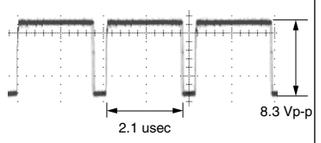
⑩ IC4202 ㊽
REC/PB



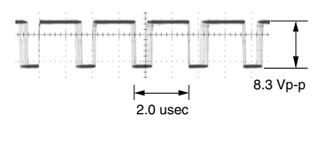
⑪ IC4202 ㉖
REC/PB (EVF)



⑫ IC4502 ㊶
REC/PB

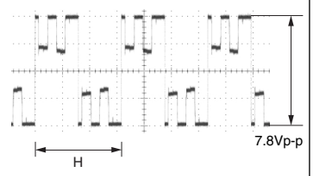


⑬ IC4502 ㊷
REC/PB

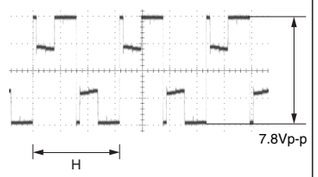


PD-188 BOARD REC/PB

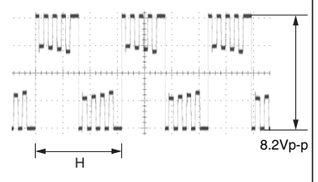
① IC6001 ⑳



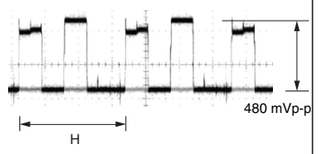
② IC6001 ㉒



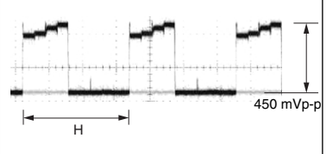
③ IC6001 ㉔



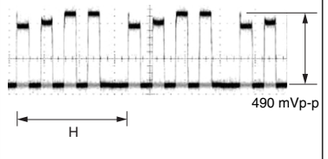
④ IC6001 ㊽



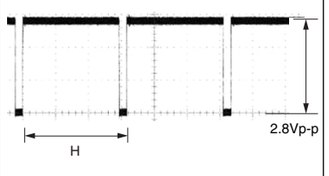
⑤ IC6001 ㊼



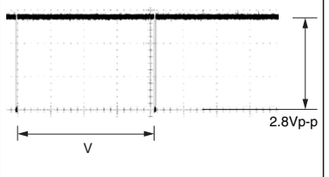
⑥ IC6001 ㊻



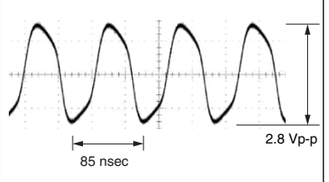
⑦ IC6002 ①



⑧ IC6002 ㊽



⑨ IC6002 ㉖



Waveforms of the VC-311 board are not shown.
Pages 4-79 and 4-80 are not shown.

4-5. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

CD-430 BOARD

*	C5001	C-1
*	C5002	B-2
*	C5003	C-2
*	C5004	C-2
*	CN5001	A-2
	IC5001	C-2
	L5001	C-2
*	Q5001	B-1
*	R5001	C-2

LB-085 BOARD

*	C5601	B-1
*	C5602	B-1
	CN5601	B-2
	CN5602	A-1
*	D5601	B-3
*	D5602	B-2
*	IC5601	C-1
*	Q5602	C-1
*	R5602	C-3
*	R5603	C-3
*	R5604	C-1
*	R5605	B-1
*	R5606	B-3
*	R5607	C-2

VA-118 BOARD

*	C4001	C-5
	C4002	A-4
*	C4003	A-3
	C4005	C-6
	C4006	C-5
	C4101	B-4
	C4103	B-4
	C4105	B-4
	C4107	B-4
	C4108	A-4
	C4109	A-5
	C4110	B-4
	C4111	B-4
	C4112	B-4
	C4113	A-5
	C4114	A-5
	C4115	A-4
	C4116	B-5
	C4117	B-5
*	C4201	C-3
*	C4202	C-4
*	C4203	C-4
*	C4204	C-4
*	C4205	C-4
*	C4206	B-3
*	C4207	B-3
*	C4208	B-3
*	C4209	B-4
*	C4210	B-3
*	C4211	B-4
*	C4212	A-3
*	C4213	A-4
*	C4214	A-4
*	C4215	A-4
*	C4216	B-4
*	C4217	B-3
*	C4218	B-3
*	C4301	B-6
*	C4302	B-6
*	C4303	A-6
*	C4304	A-6
*	C4305	B-6
*	C4306	B-6
*	C4307	B-6
*	C4308	B-6
*	C4309	B-5
*	C4310	A-5
*	C4311	B-6
*	C4312	A-6
*	C4313	A-6
*	C4314	A-6
	C4501	A-2
	C4502	A-2
	C4503	B-2
	C4504	B-2
	C4505	A-2
	C4506	A-2
	C4507	A-2
	C4508	B-2
	C4509	A-2
	C4510	B-2
	C4511	A-2
	C4512	A-2
	C4513	B-2
	C4514	A-2
	C4515	A-1
	C4516	B-2
	C4517	B-2
	C4518	A-1
	C4519	A-1
	C4520	C-2
	C4521	D-1
	C4522	C-1
*	C4523	C-2
	C4526	C-2
	C4527	C-2
	C4528	C-1
	C4529	C-2
	C4530	D-2
	C4531	D-1
	C4532	C-1
*	C4533	C-2
	C4535	D-2
	C4536	D-2
	C4537	C-2
	C4538	D-1
	C4539	D-1
	C4540	C-2
	C4541	D-3
*	C4542	D-3
	C4543	C-3
*	C4544	D-3
	C4545	B-3
*	C4546	C-3
	C4547	C-3
*	C4548	C-3
	C4549	C-3
*	C4550	C-3
	C4551	B-1
	C4552	D-3
	C4553	C-1
	C4554	D-3
	C4555	C-2
	C4557	C-3
	C4558	D-3
*	C4559	B-2
*	C4560	D-3
	C4561	A-1
	C4562	D-3
*	C4601	B-2
*	C4602	A-2
*	C4603	B-2
*	C4604	C-1
	C4605	C-1
*	C4606	C-1
	C4607	A-3
*	CN4001	A-4
*	CN4002	C-6
*	CN4003	C-5
	CN4004	D-5
*	CN4005	D-4
*	CN4201	A-1
*	CN4602	A-1
*	CN4603	D-1
	D4001	A-4
	D4002	A-4
	D4101	B-6
*	D4201	B-3
	D4502	A-2
	D4503	A-1
	D4504	C-2
	D4507	C-2
*	D4601	B-1
*	D4602	B-1
	D4603	A-3
	D4604	A-3
*	F4601	B-1
*	F4602	B-1
*	F4603	C-1
*	F4604	B-1
*	F4605	B-1
*	FB4201	B-3
*	FB4202	B-4
	IC4101	B-5
*	IC4201	B-4
*	IC4202	B-3
*	IC4301	B-6
	IC4502	B-2
	IC4504	D-3
*	L4201	C-3
*	L4202	B-3
*	L4301	A-5
*	L4501	C-2
*	L4502	D-2
*	L4503	D-2
*	L4504	C-1
*	L4505	C-2
*	L4506	D-2
*	L4507	D-2
	L4508	D-1
	L4509	D-1
	L4510	C-2
*	L4511	D-3
*	L4512	D-3
*	L4513	C-3
*	L4514	C-3
*	L4515	C-3
	L4516	C-3
	L4517	C-3
	L4518	C-3
	L4519	C-3
*	L4520	C-2
*	L4521	D-3
*	L4601	C-1
*	LF4601	A-2
	Q4001	C-6
	Q4002	C-6
	Q4003	C-5
	Q4004	C-5
	Q4005	C-5
	Q4101	B-6
	Q4504	C-1
	Q4505	D-1
	Q4506	C-1
	Q4507	C-1
	Q4508	C-2
	Q4509	D-2
	Q4510	C-2
	Q4513	C-2
	Q4514	D-2
	Q4515	C-1
	Q4516	D-3
	Q4517	C-2
	Q4518	D-2
	Q4519	C-2
	Q4520	C-1
	Q4521	C-1
	Q4524	D-3
	Q4525	D-3
	Q4526	A-1
	Q4527	A-1
*	Q4601	B-2
*	Q4602	B-1
*	Q4603	B-2
*	Q4604	B-2
	Q4608	A-3
	Q4610	A-3
*	R4002	C-5
	R4004	D-6
	R4005	D-6
	R4006	C-6
	R4007	C-6
	R4008	C-6
	R4009	C-6
	R4010	D-6
	R4103	B-4
	R4104	B-4
	R4105	B-4
	R4106	B-4
	R4107	C-4
	R4108	C-4
	R4109	A-4
	R4110	A-4
	R4111	A-5
	R4112	A-5
	R4113	C-4
	R4114	A-5
	R4115	A-5
	R4116	A-4
	R4117	B-5
	R4118	B-5
	R4119	B-6
	R4120	B-6
	R4121	B-5
	R4122	B-4
	R4123	B-4
	R4124	B-4
*	R4201	C-4
*	R4202	C-4
*	R4203	C-4
*	R4204	C-5
*	R4205	C-4
*	R4206	B-3
*	R4207	B-3
*	R4208	B-3
*	R4209	B-3
*	R4210	B-3
*	R4211	B-3
*	R4212	B-3
*	R4213	B-3
*	R4214	B-3
*	R4215	B-3
*	R4301	A-6
*	R4302	A-6
*	R4303	A-6
*	R4304	A-6
*	R4305	A-6
	R4501	A-2
	R4502	B-2
	R4503	A-3
	R4504	B-3
	R4505	B-2
	R4506	B-3
	R4507	B-2
	R4508	B-3
	R4509	B-2
	R4510	B-2
	R4511	B-2
	R4512	B-2
*	R4513	B-2
	R4514	B-2
	R4515	B-2
	R4516	B-2
	R4517	B-1
	R4518	B-2
	R4519	B-2
	R4520	B-2
	R4521	B-1
	R4522	B-1
	R4523	A-2
	R4524	B-1
	R4525	B-1
*	R4526	B-2
	R4537	C-2
	R4538	B-2
	R4539	B-1
	R4540	D-2
	R4541	C-2
	R4542	C-2
	R4543	C-1
	R4545	D-3
	R4546	C-1
	R4547	B-1
	R4549	D-3
	R4550	D-3
	R4551	D-3
	R4552	C-2
	R4553	C-1
	R4554	C-1
	R4555	C-1
	R4556	C-1
	R4557	B-1
	R4561	D-3
	R4562	D-3
	R4563	D-3
	R4564	D-3
	R4565	D-4
	R4566	D-1
	R4567	A-2
*	R4601	B-1
*	R4602	A-2
*	R4603	B-2
*	R4604	B-2
*	R4605	B-2
*	R4606	B-2
*	R4607	B-2
*	R4608	B-2
*	R4609	B-2
	R4611	A-3
*	R4613	A-2
	R4614	A-3
	R4615	A-3
	RB4101	B-4
	RB4104	B-4
	RB4105	B-4
	RB4106	C-4
	RB4107	C-5
	RB4108	A-4
	RB4109	B-6
*	RB4201	B-4
*	RB4202	B-3
*	RB4301	B-6
	X4101	A-5
	X4102	B-6

COVER

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

CK-129 BOARD

*	BT5201	C-1
*	C5201	C-1
*	C5202	B-1
*	CN5205	C-3
*	CN5207	A-1
*	CN5208	C-4
*	CN5209	E-2
*	CN5210	D-4
*	D5203	D-4
*	D5205	C-3
*	D5207	C-1
*	D5208	B-1
*	D5209	B-3
*	R5201	D-4
*	R5223	A-1
	S5203	D-4
	S5207	E-2

PD-188 BOARD

	C6001	A-2
	C6002	A-1
	C6003	A-2
	C6004	B-2
	C6005	B-2
	C6006	A-2
	C6007	B-3
	C6008	B-2
	C6009	A-3
	C6010	A-3
	C6011	B-2
	C6012	B-2
	C6013	B-3
	C6014	A-2
	C6015	C-3
	C6016	A-3
	C6017	A-3
	C6018	A-3
	C6019	B-3
	C6020	B-2
	C6021	C-2
	C6022	C-1
	C6023	C-3
	C6024	C-2
	C6101	B-4
	C6102	C-4
	C6103	A-4
	C6104	C-4
	C6105	C-4
	CN6001	D-2
	CN6101	D-4
	CN6201	B-1
	CN6202	C-1
	CN6203	D-3
	D6001	B-3
	D6002	C-2
	D6003	C-3
	D6101	A-1
	D6102	A-1
	D6103	C-4
	D6104	D-3
	FB6001	B-2
	FB6002	A-2
	IC6001	A-2
	IC6002	C-2
	IC6101	C-3
	IC6102	C-4
	L6001	B-2
	L6002	C-3
	L6101	B-4
	Q6001	C-2
	Q6002	C-2
	Q6003	B-2
	Q6004	C-2
	Q6005	C-1
	Q6101	C-3
	Q6102	A-4
	Q6103	A-4
	Q6104	C-4
	R6001	A-2
	R6002	A-2
	R6003	B-3
	R6004	B-2
	R6005	A-2
	R6006	B-2
	R6007	B-2
	R6008	B-2
	R6009	B-2
	R6010	B-2
	R6011	B-2
	R6012	B-2
	R6013	B-3
	R6014	C-2
	R6015	C-2
	R6016	C-2
	R6017	C-2
	R6018	B-2
	R6019	C-1
	R6020	C-1
	R6021	C-2
	R6022	C-2
	R6023	A-1
	R6101	A-1
	R6102	A-1
	R6103	C-3
	R6104	C-4
	R6105	C-4
	R6106	A-4
	R6107	C-4
	R6108	C-4
	R6109	C-4
	R6110	C-4
	RB6001	A-3
	RB6002	A-3
	T6101	B-4

JK-242 BOARD

	CN5301	A-3
	CN5302	B-3
	CN5303	D-1
*	D5302	A-2
*	D5303	A-2
*	D5304	B-2
*	D5305	D-1
*	FB5301	C-1
*	FB5302	D-1
	J5301	C-2
*	LF5301	A-2
*	R5304	A-2
*	R5305	A-2
*	R5306	C-1
*	VD5301	C-1
*	VD5302	C-1
*	VD5303	D-1

MA-421 BOARD

	C5402	B-4
*	C5404	C-3
*	C5501	C-4
	C5502	B-4
	C5503	B-4
*	C5504	C-4
*	C5505	B-4
*	C5506	B-4
*	C5510	C-4
*	C5511	B-5
*	C5512	C-4
	C5513	B-4
	C5514	B-4
*	C5515	C-4
*	C5516	C-4
	C5517	B-4
	C5518	B-4
*	C5519	C-4
	C5520	B-4
*	C5521	C-4
	C5522	B-4
	C5523	B-4
*	C5524	C-4
	C5527	B-4
	C5528	B-4
*	C5529	C-4
*	C5530	C-4
*	C5531	C-3
*	C5532	C-3
*	C5533	B-3
*	C5535	C-3
*	C5536	C-3
*	C5537	C-3
*	C5538	C-3
*	C5539	C-3
*	CN5401	A-2
*	CN5402	C-2
	D5401	B-4
*	D5403	B-2
*	D5404	B-3
	D5405	C-3
	D5407	A-3
	D5408	B-1
	D5409	C-4
*	FB5401	C-2
*	FB5402	C-2
*	FB5403	A-2
*	FB5404	A-2
*	FB5405	B-4
*	FB5406	B-5
*	FB5407	A-2
*	FB5408	B-2
*	FB5409	C-1
	FB5410	A-5
*	FB5411	B-5
	IC5401	C-3
*	IC5501	C-4
	J5401	A-4
	J5402	A-2
	J5404	B-1
	J5405	A-5
*	L5501	C-3
	R5401	B-4
	R5402	B-4
*	R5403	B-1
*	R5405	C-3
*	R5406	A-2
*	R5407	C-2
*	R5408	B-2
*	R5501	C-3
*	R5502	C-3
*	R5503	C-4
*	R5504	B-4
*	R5505	C-4
	R5506	B-4
	R5507	B-4
	R5508	B-4
*	R5509	C-4
*	R5510	C-4
	R5511	B-4
	R5512	B-4
*	R5513	C-4
	R5514	B-4
	R5515	B-4
*	R5516	C-4
*	R5517	C-4
	R5518	B-4
*	R5519	C-4
	R5520	C-4
*	R5521	C-4
*	R5522	C-3
*	R5524	C-3
*	R5525	B-3
*	R5526	C-3
*	R5527	C-3
*	R5528	C-3
*	R5529	C-3
	R5530	C-4
	R5531	B-4
*	R5532	C-4
	R5533	B-4
*	R5534	C-4
*	SE5401	C-2
	SE5402	A-2
*	VD5401	B-5
*	VD5402	B-4
*	VD5403	B-1
*	VD5407	B-2
*	VD5408	C-2
*	VD5409	B-5
	VD5410	A-5

Mounted parts location of the VC-311 board is not shown.
Page 4-83 is not shown.

COVER

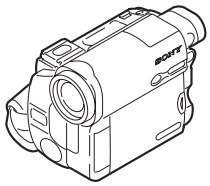
NOTE

5. REPAIR PARTS LIST

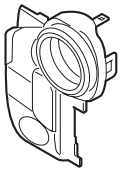
NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

EXPLODED VIEWS

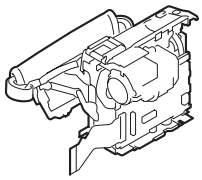


OVERALL SECTION



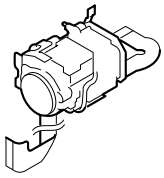
A

F PANEL SECTION



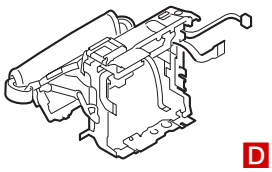
B

MAIN CHASSIS SECTION



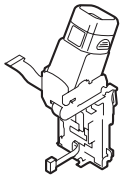
C

LENS SECTION



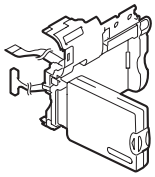
D

CABINET L SECTION



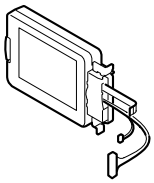
E

BT PANEL/EVF SECTION



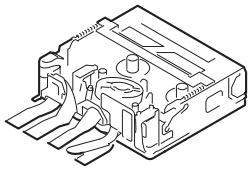
F

CABINET R SECTION

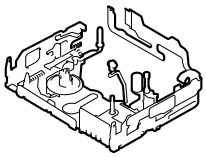


G

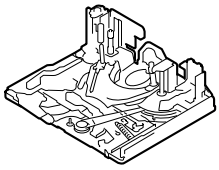
LCD SECTION



OVERALL (MECHANISM DECK-Z100)



LS CHASSIS BLOCK ASSEMBLY



MECHANICAL CHASSIS BLOCK ASSEMBLY

Link

ELECTRICAL PARTS LIST

ACCESSORIES

CD-430 BOARD C	JK-242 BOARD D	PD-188 BOARD G
CK-129 BOARD F	LB-085 BOARD E	VA-118 BOARD B
FP-626 FLEXIBLE BOARD G	MA-421 BOARD A	

COVER

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  CND : Canadian model
  AUS : Australian model
  EE : East European model
  NE : North European model
  CH : Chinese model
  KR : Korea model
  HK : Hong Kong model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

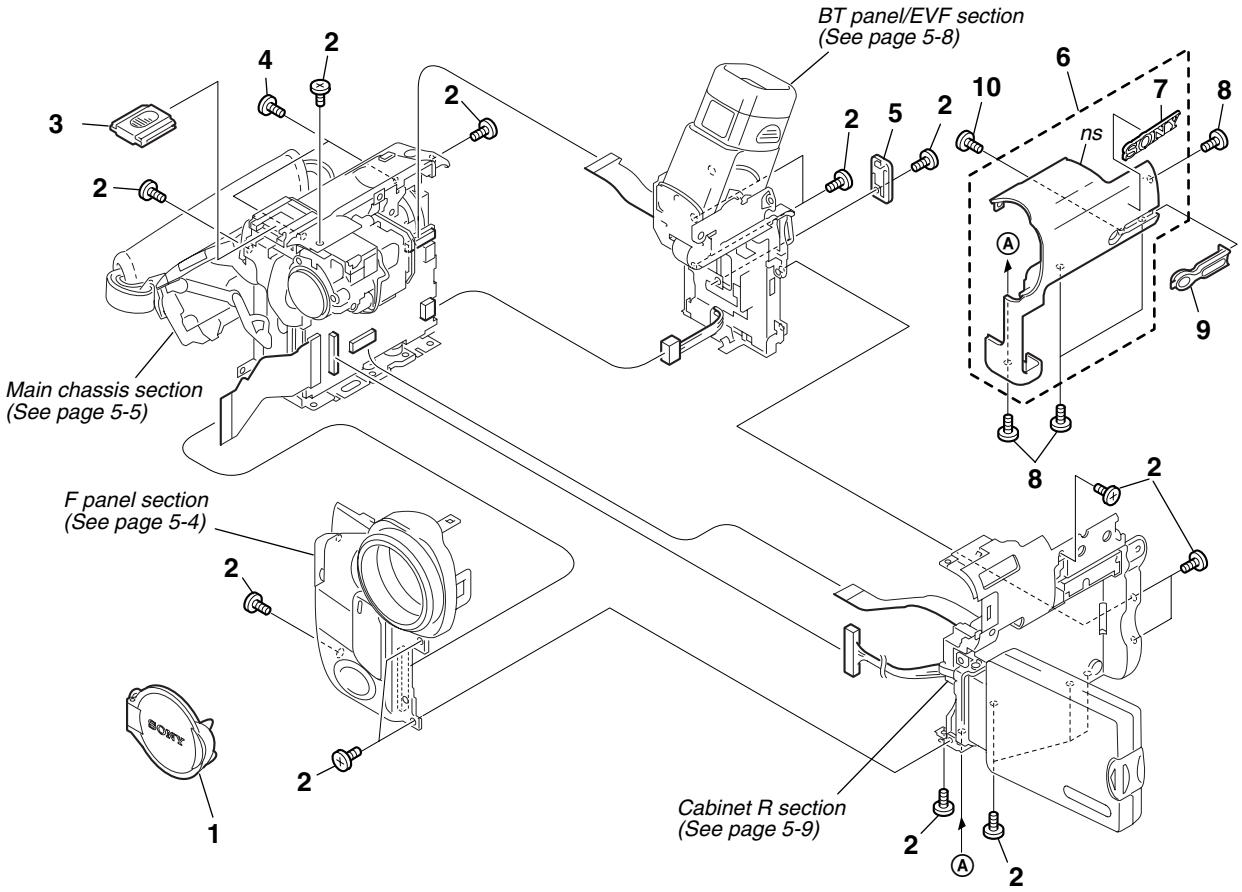
COVER

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL SECTION

ns : not supplied



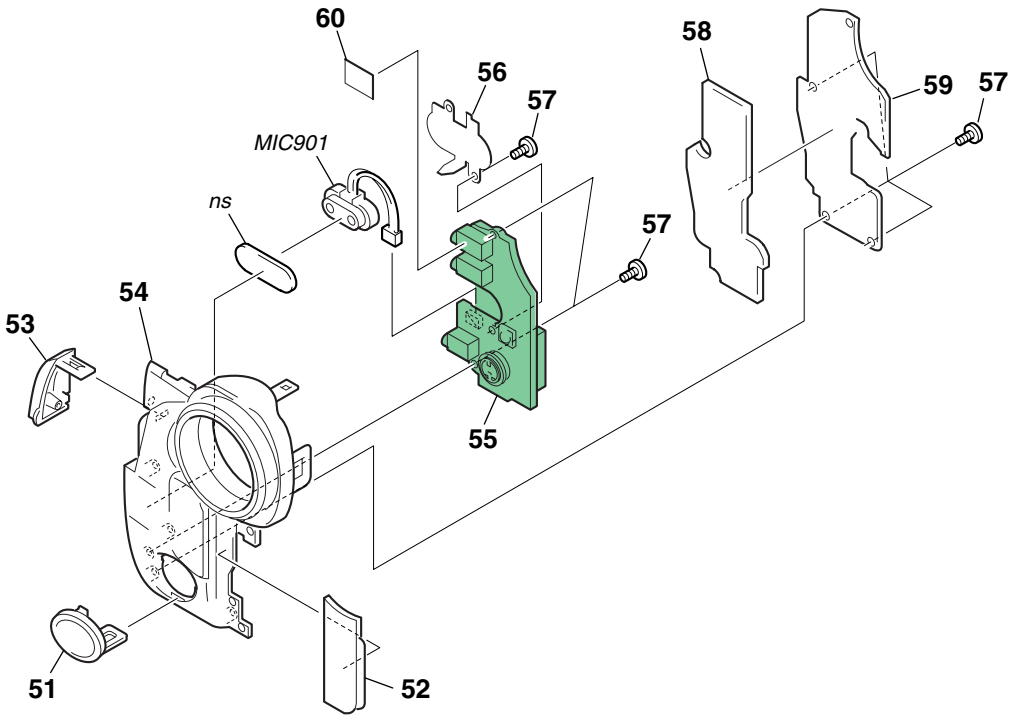
Ref. No.	Part No.	Description	Remarks
1	X-3953-088-1	CAP ASSY, LENS	
2	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
3	3-080-571-01	COVER, SHOE	
4	3-056-030-81	SCREW (M1.7), LOCK ACE, P2	
5	3-080-570-01	LID, CPC	
6	X-3953-228-1	COVER (39E) ASSY, CABINET (R)	
7	4-942-636-01	EMBLEM (NO.3.5), SONY	
8	3-989-735-51	SCREW (M1.7), LOCK ACE, P2	
9	3-080-421-01	BUTTON, CF (TRV19/TRV19E)	
9	3-080-421-21	BUTTON, CF (TRV12E/TRV14E)	
10	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	

COVER

5. REPAIR PARTS LIST

5-1-2. F PANEL SECTION

ns : not supplied



Ref. No.	Part No.	Description	Remarks
51	3-080-516-01	COVER, S TERMINAL	
52	3-080-402-51	PLATE, NAME (TRV19)	
52	3-080-402-61	PLATE, NAME (TRV19E)	
52	3-080-402-71	PLATE, NAME (TRV12E)	
52	3-080-402-81	PLATE, NAME (TRV14E)	
53	3-080-573-01	COVER (F), JACK	
54	X-3953-270-1	PANEL (384) ASSY, F (TRV12E)	
54	X-3953-271-1	PANEL (390) ASSY, F (TRV14E/TRV19/TRV19E)	

Ref. No.	Part No.	Description	Remarks
55	A-7013-812-A	MA-421 (MSNASHI) BOARD, COMPLETE	
56	3-080-517-01	RETAINER, MICROPHONE	
57	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
58	3-080-519-01	CUSHION, MA COVER	
59	3-080-514-01	COVER, MA	
60	CAUTION	SHEET, HP	
MIC901	1-542-513-11	MICROPHONE	

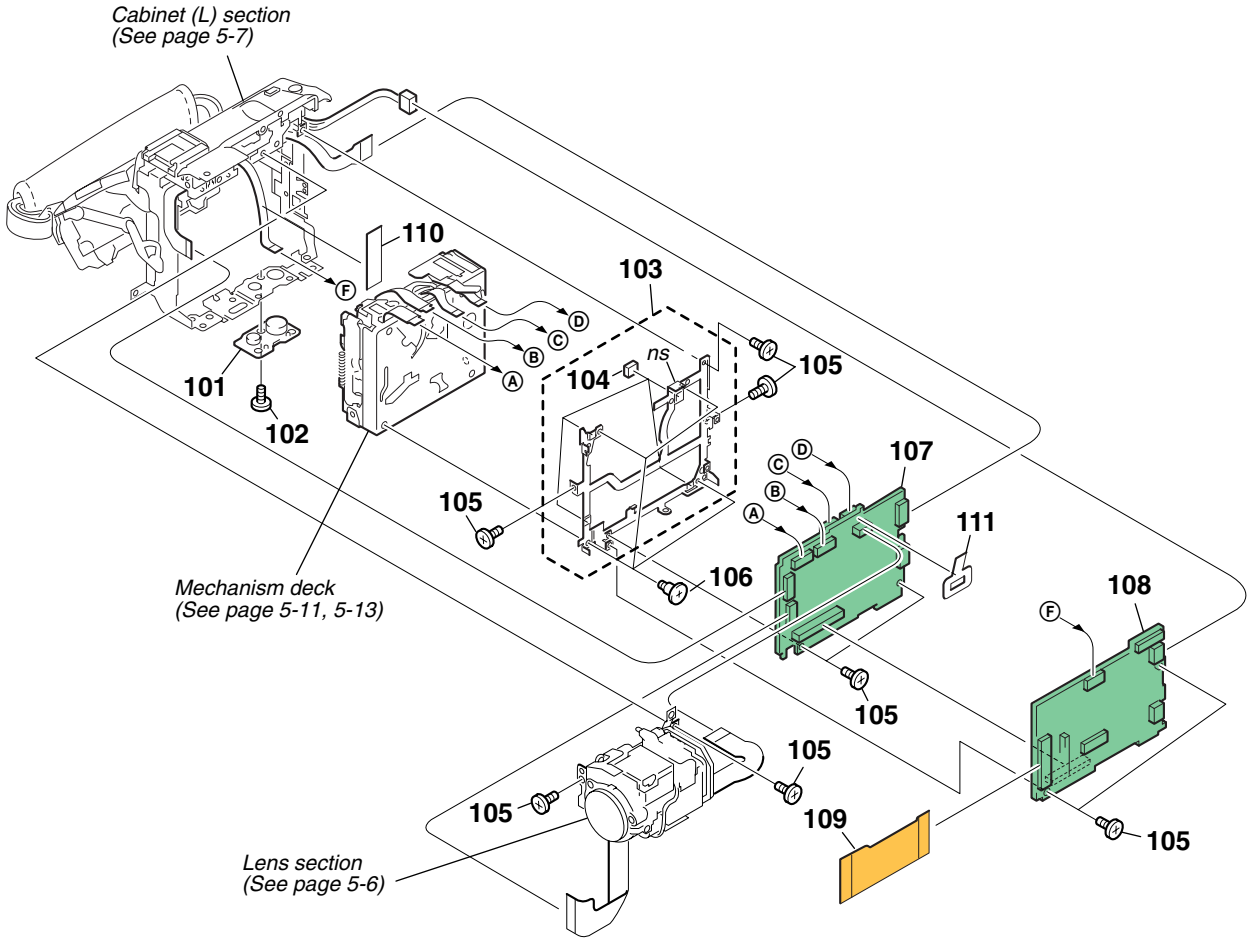
CAUTION :
For the parts of 60: SHEET, HP (3-083-974-01) cut SHEET (MD), CN (3-075-957-02) into the desired length and use it.

COVER

5. REPAIR PARTS LIST

5-1-3. MAIN CHASSIS SECTION

ns : not supplied



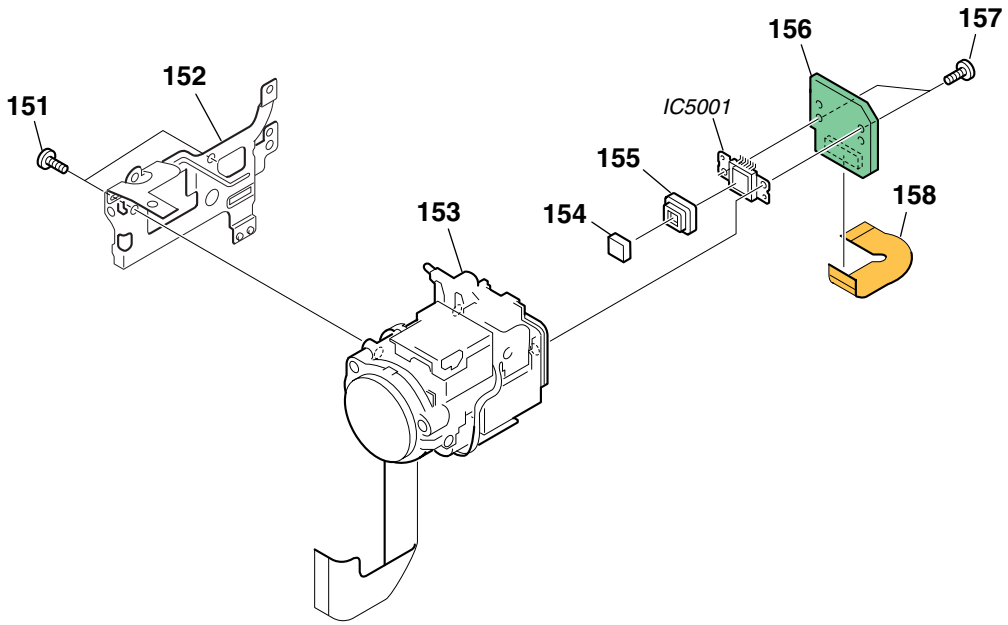
Ref. No.	Part No.	Description	Remarks
101	3-080-569-01	SCREW	
102	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
103	X-3953-112-1	FRAME ASSY, MD	
104	3-975-921-01	SHEET, VIBRATION PROOF	
105	3-989-735-01	SCREW (M1.7), LOCK ACE, P2	
106	3-062-214-01	SCREW (M1.4X1.5)	
107	A-7016-786-A	VC-311 (DVO) BOARD, COMPLETE (SERVICE)	(TRV12E/TRV14E)

Ref. No.	Part No.	Description	Remarks
107	A-7016-562-A	VC-311 (DVIO) BOARD, COMPLETE (SERVICE)	(TRV19/TRV19E)
108	A-7013-780-A	VA-118 (MD) BOARD, COMPLETE	
109	1-687-546-11	FP-621 FLEXIBLE BOARD	
110	3-941-343-21	TAPE (A)	
111	3-081-787-01	SHEET, RF	

COVER

5. REPAIR PARTS LIST

5-1-4. LENS SECTION



Be sure to read “Precautions upon replacing CCD imager” on page 4-9 when changing the CCD imager.

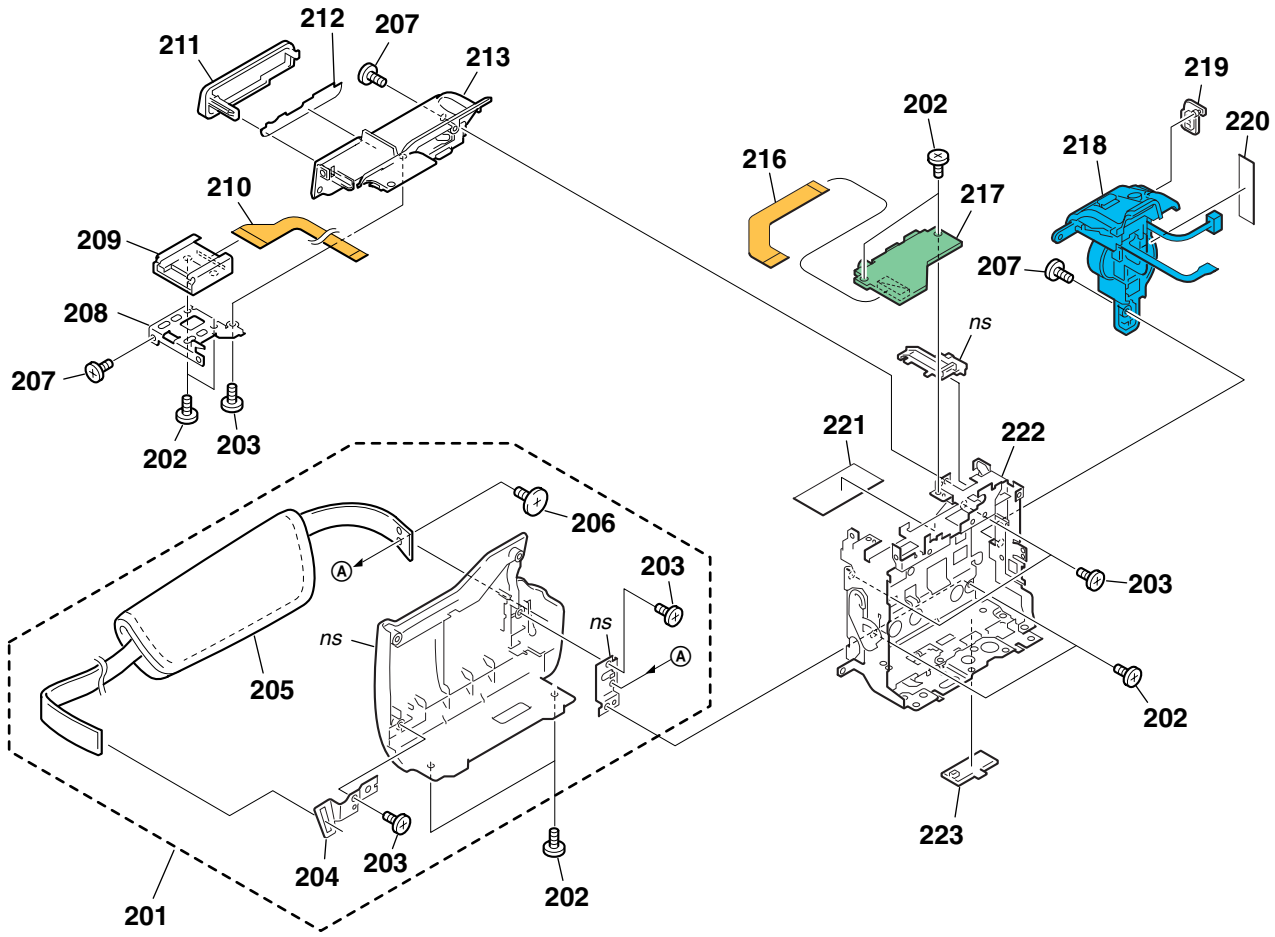
Ref. No.	Part No.	Description	Remarks
151	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
152	X-3953-110-1	FRAME (39) ASSY, LENS	
153	8-848-767-01	DEVICE, LENS LSV-650E	
154	1-758-155-21	FILTER BLOCK, OPTICAL	
155	3-053-973-01	RUBBER (W), SEAL	
156	A-7013-526-A	CD-430 BOARD, COMPLETE	
157	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
158	1-687-547-11	FP-623 FLEXIBLE BOARD	
IC5001	A-7031-244-A	CCD BLOCK ASSY (CCD IMAGER) (TRV19)	
IC5001	A-7031-276-A	CCD BLOCK ASSY (CCD IMAGER) (TRV12E/TRV14E/TRV19E)	

COVER

5. REPAIR PARTS LIST

5-1-5. CABINET L SECTION

ns : not supplied



Ref. No.	Part No.	Description	Remarks
201	X-3953-220-2	CABINET (G) ASSY (39V) (TRV19/TRV19E)	
201	X-3953-350-1	CABINET (G) ASSY (39P) (TRV12E/TRV14E)	
203	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
204	3-080-468-01	SHEET METAL (FRONT), GRIP BELT	
205	3-080-467-01	BELT, GRIP	
206	3-073-686-11	SCREW (M2X2.5)	
207	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
208	3-080-473-01	FRAME, SHOE	
209	1-793-996-11	CONNECTOR, EXTERNAL	
210	1-687-545-11	FP-620 FLEXIBLE BOARD	
211	3-080-572-01	COVER (L), JACK	

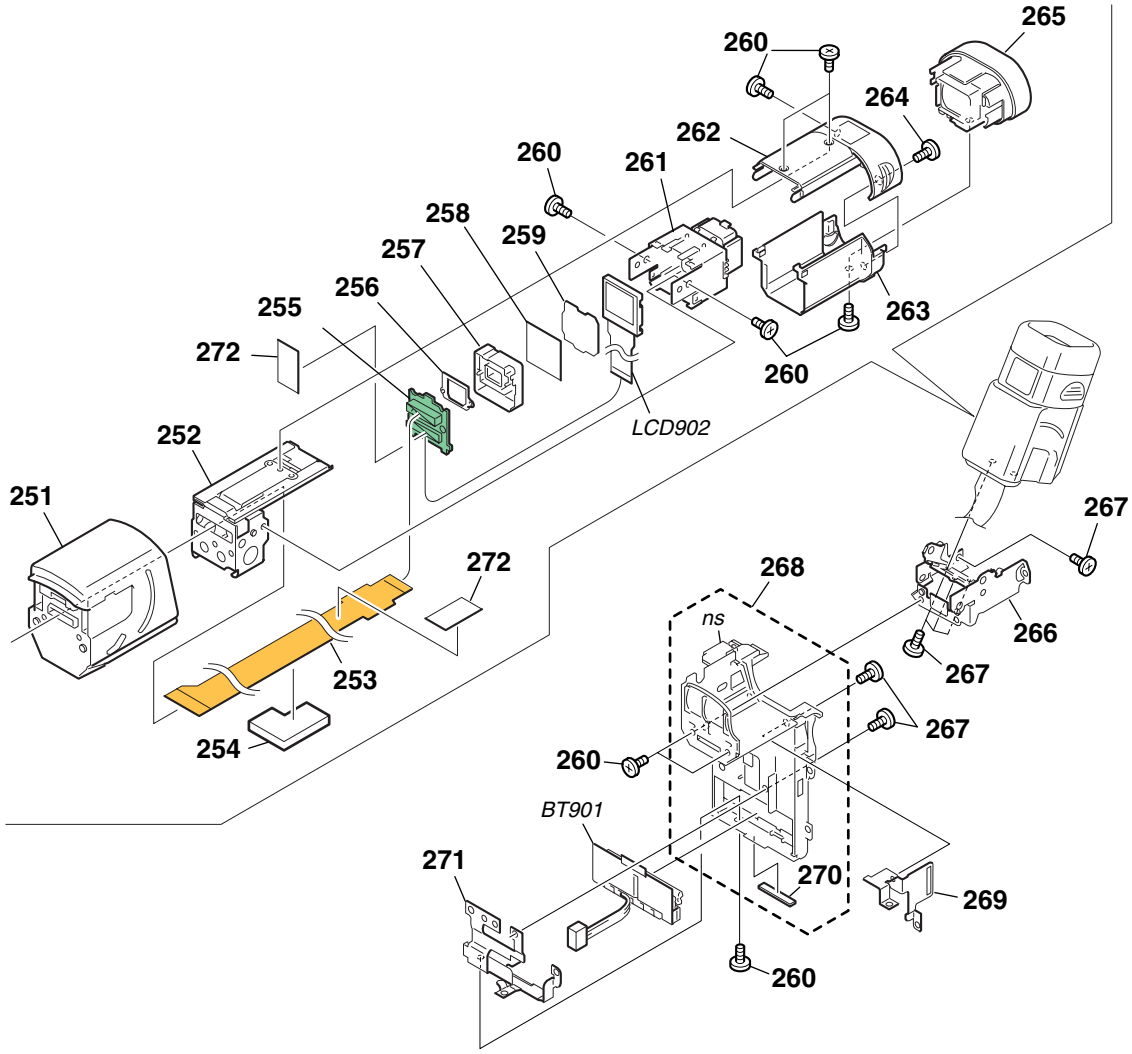
Ref. No.	Part No.	Description	Remarks
212	3-080-576-21	SHEET (L), JACK (TRV19/TRV19E)	
212	3-080-576-31	SHEET (L), JACK (TRV12E/TRV14E)	
213	X-3953-217-1	CABINET (L) ASSY (39E)	
216	1-687-549-11	FP-625 FLEXIBLE BOARD	
217	A-7013-551-A	JK-242 BOARD, COMPLETE	
218	1-477-740-31	SWITCH BLOCK, CONTROL	
219	3-082-335-01	COVER, JACK DC-IN (SERVICE)	
220	3-076-631-01	RETAINER, FK FLEXIBLE	
221	3-081-434-01	SHEET Z	
222	X-3953-096-1	FRAME ASSY, CS	
223	3-080-471-01	KNOB, EJECT	

COVER

5. REPAIR PARTS LIST

5-1-6. BT PANEL/EVF SECTION

ns : not supplied



Ref. No.	Part No.	Description	Remarks
251	3-080-420-01	CABINET, VF TILT	
252	X-3953-118-1	SLIDE ASSY, VF	
253	1-687-544-21	FP-619 FLEXIBLE BOARD	
254	3-081-694-02	RETAINER, EVF FLEXIBLE	
255	A-7013-779-A	LB-085 (BW) BOARD, COMPLETE	
256	3-080-615-01	CUSHION (LB) (40)	
257	3-080-618-01	GUIDE (40), LAMP	
258	3-080-613-01	ILLUMINATOR (40)	
259	3-080-614-01	SHEET (40), PRISM	
260	3-989-735-01	SCREW (M1.7), LOCK ACE, P2	
261	X-3953-119-1	CABINET ASSY, LCD	
262	X-3953-117-1	CABINET (UPPER) ASSY, VF SLIDE	

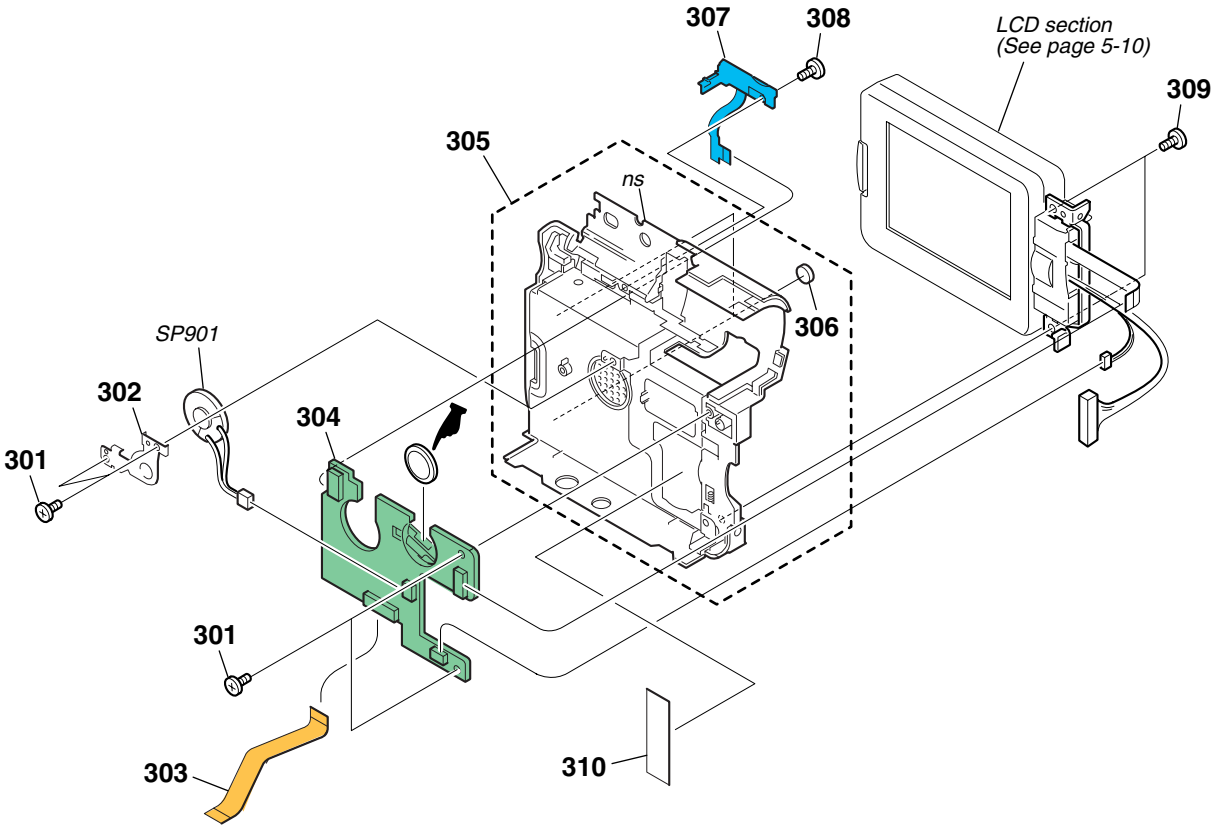
Ref. No.	Part No.	Description	Remarks
263	3-080-617-01	CABINET (LOWER), VF SLIDE	
264	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
265	X-3953-115-1	EYE CUP (40) ASSY	
266	X-3953-116-1	HINGE ASSY, VF	
267	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
268	X-3953-113-1	PANEL ASSY, BATTERY	
269	X-3953-349-2	SHEET METAL (UPPER) ASSY STRAP	
270	3-080-543-01	SHEET, FOOT	
271	X-3953-114-1	SHEET METAL (LOWER) ASSY,STRAP	
272	3-083-290-01	SHEET (VF)	
BT901	1-694-796-11	TERMINAL BOARD, BATTERY	
LCD902	8-753-028-49	LCX032AP-5	

COVER

5. REPAIR PARTS LIST

5-1-7. CABINET R SECTION

ns : not supplied



: BT5201 (Lithium battery) CK-129 board on the mount position. (See page 4-65)

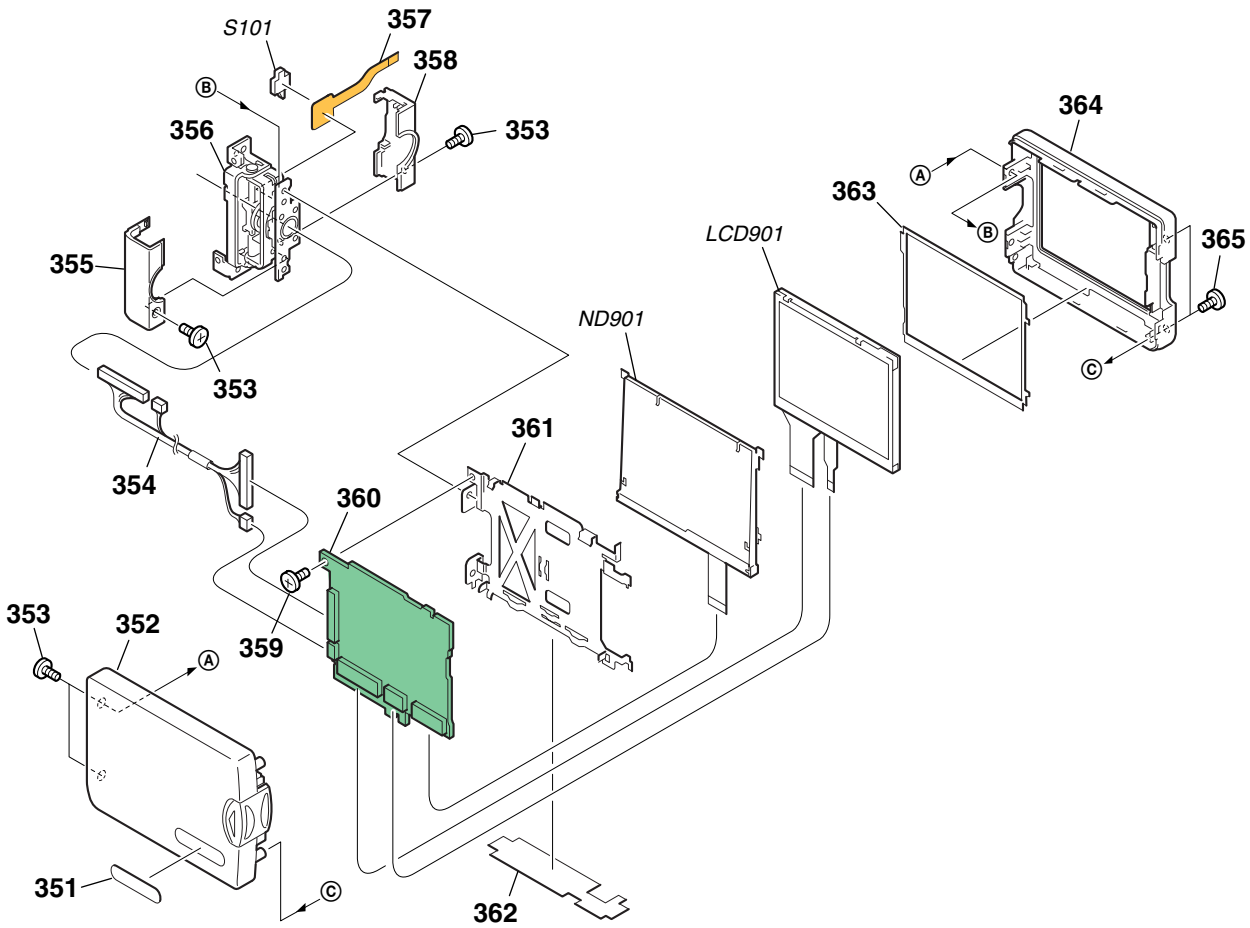
CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Ref. No.	Part No.	Description	Remarks
301	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
302	X-3953-097-1	RETAINER ASSY, SPEAKER	
303	1-687-543-11	FP-618 FLEXIBLE BOARD	
304	A-7013-534-A	CK-129 BOARD, COMPLETE	
305	X-3953-095-2	CABINET (R) ASSY	
306	3-959-978-02	CUSHION, PANEL	
307	1-477-741-11	SWITCH BLOCK, CONTROL	
308	3-989-735-01	SCREW (M1.7), LOCK ACE, P2	
309	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
310	3-941-343-21	TAPE (A)	
SP901	1-825-260-21	LOUD SPEAKER (1.6CM)	

COVER

5. REPAIR PARTS LIST

5-1-8. LCD SECTION



CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Ref. No.	Part No.	Description	Remarks
351	3-080-441-11	EMBLEM, P	
352	X-3953-221-1	CABINET (C) ASSY (LO), P	
353	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
354	1-962-081-11	HARNESS (PV-140)	
355	3-080-387-01	COVER (C) (40), HINGE	
356	X-3953-107-2	HINGE (40) ASSY	
357	1-687-550-11	FP-626 FLEXIBLE BOARD	
358	3-080-496-01	COVER (M) (40), HINGE	
359	3-989-735-01	SCREW (M1.7), LOCK ACE, P2	

Ref. No.	Part No.	Description	Remarks
360	A-7013-528-A	PD-188 BOARD, COMPLETE	
361	3-080-498-01	FRAME (40), PANEL	
362	3-080-499-01	SHEET (40), INSULATING, LCD	
363	3-080-497-01	CUSHION (T), LCD	
364	X-3953-106-1	CABINET (M) (40) ASSY, P	
365	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
LCD901	8-753-052-10	ACX307AKM-1	
⚠ND901	1-477-755-11	BLOCK LIGHT GUIDE PLATE (2.5)	
S101	1-771-039-31	SWITCH, PUSH (PANEL REVERSE)	

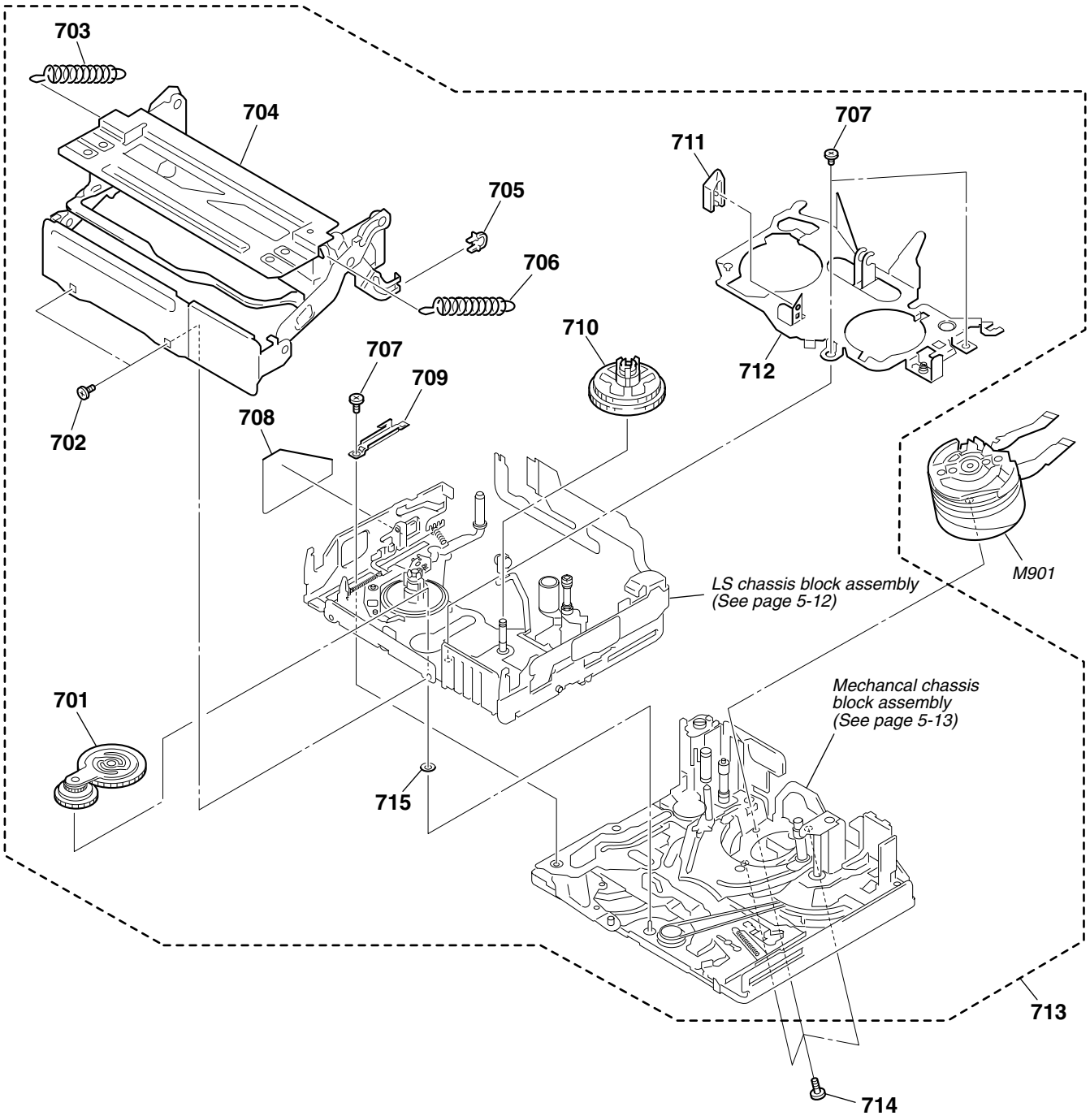
Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

5. REPAIR PARTS LIST

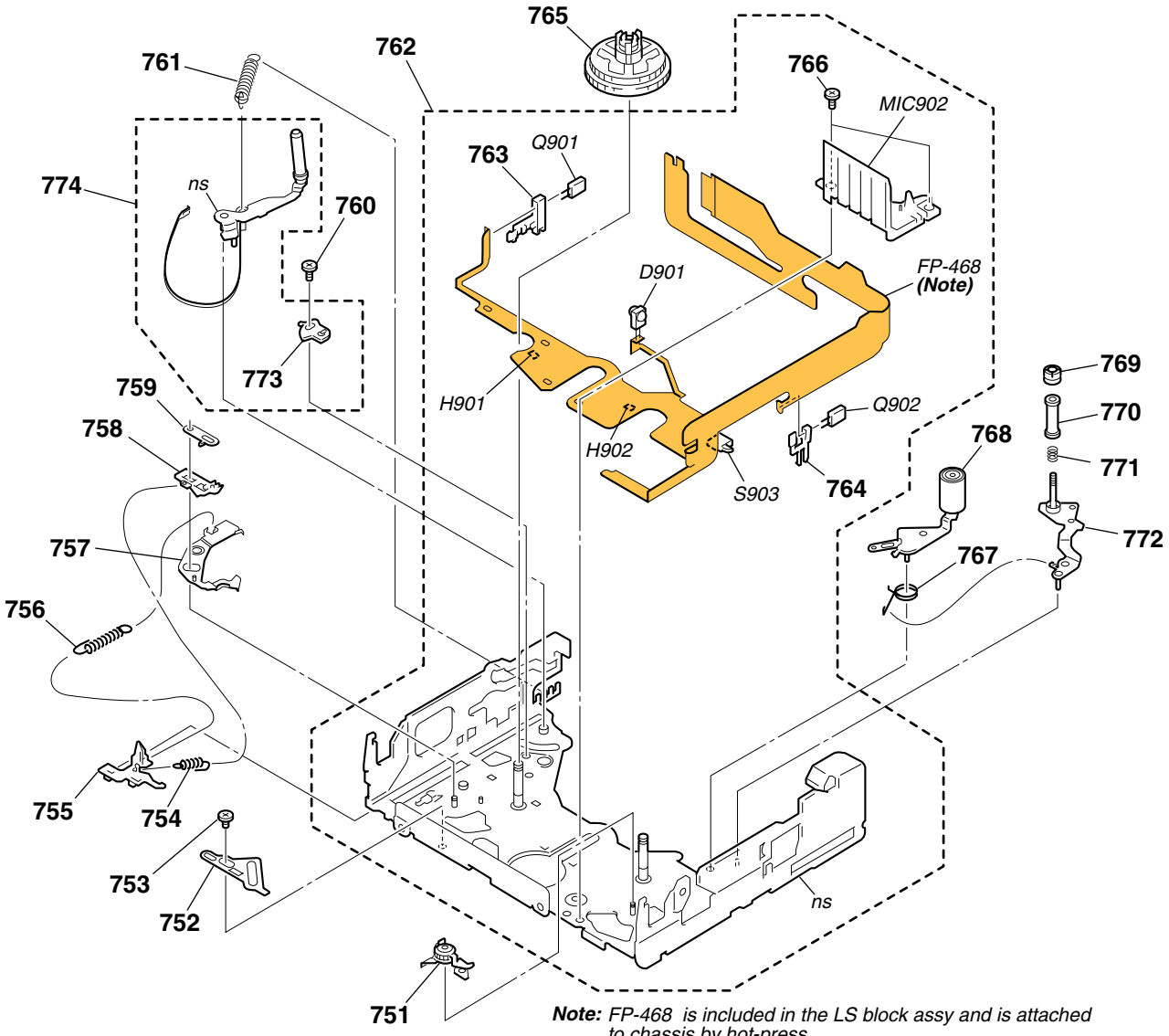
5-1-9. OVERALL (MECHANISM DECK-Z100)



Ref. No.	Part No.	Description	Remarks
701	X-3952-938-3	GEAR ASSY, GOOSENECK	
702	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD	
703	3-079-206-02	SPRING (POP UP S), TXTENSION	
704	X-3952-939-3	COMPARTMENT ASSY, CASSETTE	
705	3-079-367-01	DAMPER, CASSETTE COMPARTMENT	
706	3-079-215-02	SPRING (POP UP T), EXTENSION	
707	3-703-816-15	SCREW (M1.4), SPECIAL HEAD	
708	3-080-545-01	COVER, SENSOR S	
709	3-079-364-01	RETAINER, LS GUIDE	
710	X-3952-937-1	TABLE ASSY, T REEL	
711	3-079-366-01	RELEASE, REEL LOCK	
712	X-3953-257-1	PLATE ASSY,RETAINER	
713	A-7095-393-A	MD (Z100) SUB ASSY	
714	3-079-741-02	SCREW,DRUM FIXING	
715	3-748-682-01	WASHER, T	
M901	A-7048-981-A	DRUM (DEH-30A-R) (SERVICE)	

5-1-10. LS CHASSIS BLOCK ASSEMBLY

ns : not supplied



Note: *FP-468 is included in the LS block assy and is attached to chassis by hot-press.*
because installation of FP-468 requires a very high accuracy, FP-468 is hot supplied as an independent service parts.

Ref. No.	Part No.	Description	Remarks
751	A-7095-402-B	BRAKE (T) BLOCK ASSY	
752	3-079-241-01	PLATE, LS CAM	
753	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD	
754	3-079-246-01	SPRING(RELEASE RACK),EXTENSION	
755	3-079-248-01	POSITIONING(S), CASSETTE	
756	3-079-244-01	SPRING (ULE), EXTENSION	
757	X-3952-932-1	BRAKE ASSY, ULE	
758	3-079-245-01	RACK (S), RELEASE	
759	3-079-247-01	BRAKE (S)	
760	3-059-090-11	SCREW (M1.4X2.5), SPECIAL HEAD	
761	3-079-242-01	SPRING, TENSION	
762	A-7095-401-A	LS BLOCK ASSY	
763	3-079-267-01	HOLDER (S), SENSOR	
764	3-079-268-01	HOLDER (T), SENSOR	
765	X-3952-936-2	TABLE ASSY, S REEL	
766	3-703-816-15	SCREW (M1.4), SPECIAL HEAD	

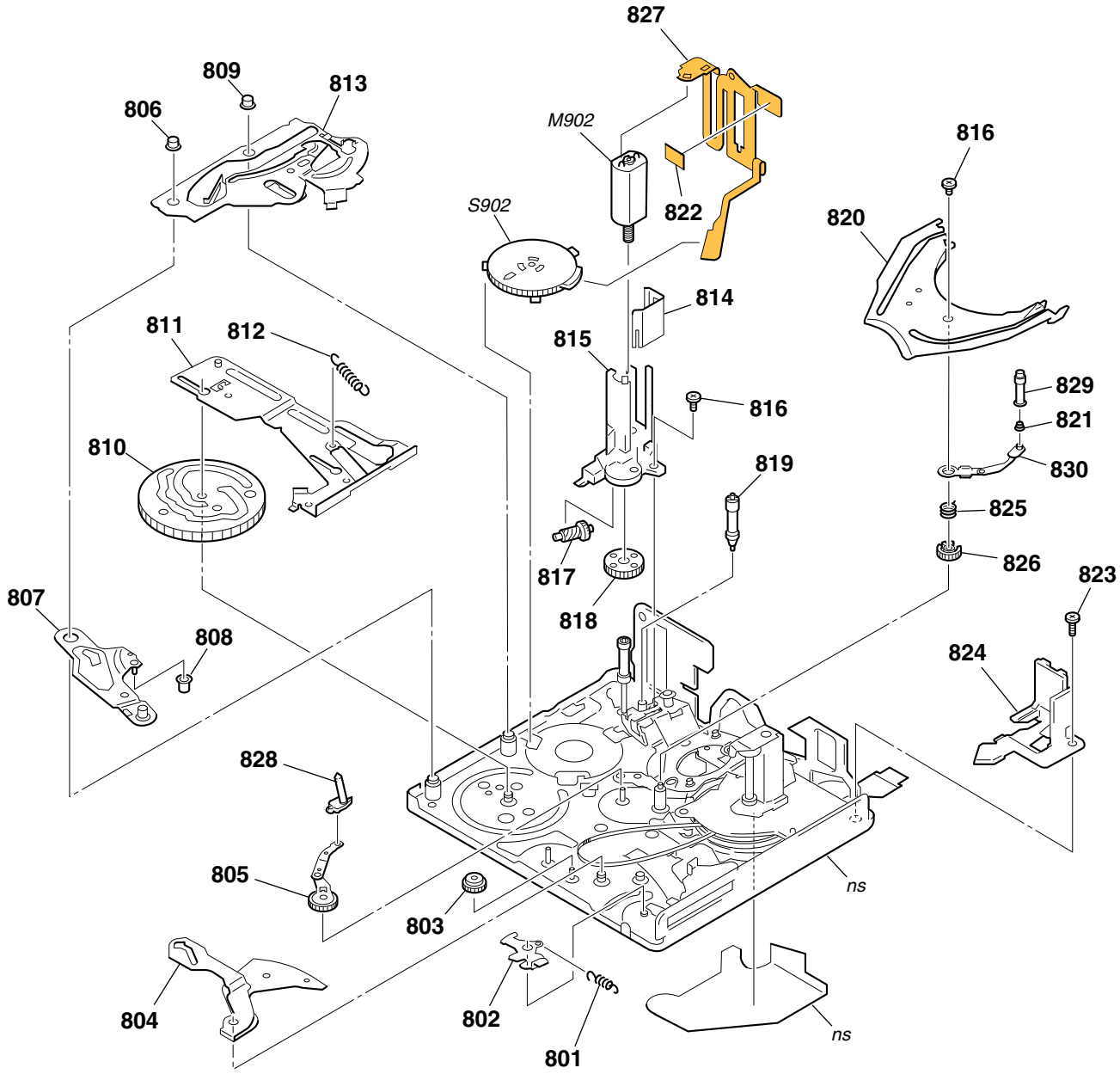
Ref. No.	Part No.	Description	Remarks
767	3-079-243-01	SPRING (PINCH RETURN), TORSION	
768	X-3952-934-1	ARM ASSY, PINCH	
769	3-052-062-02	NUT, TG7	
770	3-079-219-02	TG7	
771	3-081-591-01	SPRING, COMPRESSION (TG7)	
772	X-3952-935-3	ARM ASSY, TG7	
773	3-079-237-01	ADJUSTOR, BAND	
774	A-7095-403-B	TG2 ARM BLOCK ASSY	
D901	6-500-652-01	DIODE GL453SE0000F (TAPE LED)	
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)	
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)	
MIC902	1-817-175-12	PIN, CONNECTOR (WITH DETECTION SWITCH)	
S903	1-529-566-51	SWITCH, PUSH (1 KEY) (C.C. DOWN)	
Q901	6-550-402-01	TRANSISTOR PT4850FE000F (TAPE END)	
Q902	6-550-402-01	TRANSISTOR PT4850FE000F (TAPE TOP)	

COVER

5. REPAIR PARTS LIST

5-1-11. MECHANICAL CHASSIS BLOCK ASSEMBLY

ns : not supplied



Ref. No.	Part No.	Description	Remarks
801	3-079-314-01	SPRING (EJ), EXTENSION	
802	3-079-327-01	ARM, EJ	
803	3-079-323-02	GEAR, CONVERSION	
804	3-079-324-01	ARM, GL DRIVING	
805	X-3952-928-1	GL (S) ASSY	
806	3-079-315-01	ROLLER (S1), LS GUIDE	
807	X-3952-925-1	ARM ASSY, LS	
808	3-079-320-01	ROLLER, LS	
809	3-079-316-01	ROLLER (S2), LS GUIDE	
810	3-079-319-01	GEAR, CAM	
811	X-3952-941-1	SLIDER ASSY, M	
812	3-079-321-02	SPRING (PINCH), EXTENSION	
813	X-3952-940-2	PLATE ASSY, TG2 CAM	
814	3-079-312-01	SHIELD, MOTOR	
815	3-079-307-01	HOLDER, MOTOR	
816	3-703-816-15	SCREW (M1.4), SPECIAL HEAD	

Ref. No.	Part No.	Description	Remarks
817	3-079-308-01	SHAFT, WORM	
818	3-079-309-01	GEAR, DECELERATION	
819	X-3952-942-2	ROLLER ASSY, TG3	
820	3-079-325-01	RAIL, GUIDE	
821	3-079-295-02	SPRING, TG5	
822	1-677-049-11	FP-228 FLEXIBLE BOARD	
823	3-079-328-01	SCREW ,SPECIAL	
824	3-079-326-02	SUPPORT, TG7	
825	3-079-301-01	SPRING (GLT), TORSION	
826	3-079-298-01	GEAR (T), GL	
827	1-686-798-11	FP-467 FLEXIBLE BOARD	
828	X-3952-927-2	COASTER (S) ASSY	
829	X-3952-930-3	ROLLER ASSY, TG5	
830	X-3952-929-3	COASTER (T) ASSY	
M902	A-7095-396-A	MOTOR BLOCK ASSY, L (LOADING)	
S902	1-477-679-11	ROTARY, ENCODER (MODE SWITCH)	

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-7013-526-A	CD-430 BOARD, COMPLETE			
		**********			
		(IC5001 is not included in this complete board.)			
		< CAPACITOR >			
C5001	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5002	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C5003	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5004	1-113-987-11	TANTAL. CHIP	4.7uF	20%	25V
		< CONNECTOR >			
CN5001	1-691-352-21	CONNECTOR, FFC/FPC(ZIF)14P			
		<IC>			
IC5001	A-7031-244-A	CCD BLOCK ASSY (CCD IMAGER) (TRV19)			
IC5001	A-7031-276-A	CCD BLOCK ASSY (CCD IMAGER) (TRV12E/TRV14E/TRV19E)			
		< COIL >			
L5001	1-414-406-11	INDUCTOR	220uH		
		< TRANSISTOR >			
Q5001	8-729-117-73	TRANSISTOR	2SC4178-F13F14-T1		
		< RESISTOR >			
R5001	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
	A-7013-534-A	CK-129 BOARD, COMPLETE			
		**********			
		< BATTERY >			
BT5201	1-756-128-11	BATTERY, LITHIUM(SECONDARY)			
		< CONNECTOR >			
CN5205	1-778-506-21	PIN, CONNECTOR(PC BOARD)2P			
CN5207	1-766-866-21	CONNECTOR, FFC/FPC 6P			
CN5208	1-691-354-21	CONNECTOR, FFC/FPC(ZIF)16P			
CN5209	1-766-336-21	CONNECTOR, FFC/FPC 6P			
CN5210	1-794-376-21	PIN, CONNECTOR 4P			
		< DIODE >			
D5203	8-719-056-85	DIODE	UDZSTE-178.2B		
D5205	6-500-289-01	DIODE	MAZW082H0LS0		
		< RESISTOR >			
R5201	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5223	1-218-945-11	RES-CHIP	220	5%	1/16W
		< SWITCH >			
S5203	1-771-138-82	SWITCH, KEY BOARD(RESET)			
S5207	1-762-805-21	SWITCH, PUSH(1 KEY)(PANEL_XCLOSE/OPEN)			

Ref. No.	Part No.	Description			
	1-687-550-11	FP-626 FLEXIBLE BOARD, COMPLETE			
		**********			
S101	1-771-039-31	SWITCH, PUSH(PANEL REVERSE)			
	A-7013-551-A	JK-242 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
CN5301	1-794-962-11	CONNECTOR, SQUARE TYPE(USB 5P)			
CN5302	1-794-276-11	CONNECTOR, SQUARE TYPE 4P			
CN5303	1-691-380-21	CONNECTOR, FFC/FPC 16P			
		< DIODE >			
D5302	8-719-075-15	DIODE	MAZT082H08S0		
D5304	8-719-078-02	DIODE	1SS357(T3SONY1)		
		< FERRITE BEAD >			
FB5301	1-500-444-11	FERRITE	0uH		
FB5302	1-500-444-11	FERRITE	0uH		
		< JACK >			
J5301	1-778-040-11	JACK, SMALL TYPE(AUDIO/VIDEO OUT)			
		< LINE FILTER >			
LF5301	1-419-983-21	INDUCTOR	0uH		
		< RESISTOR >			
R5304	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5305	1-218-979-11	RES-CHIP	150K	5%	1/16W
R5306	1-216-864-11	METAL CHIP	0	5%	1/16W
		< VARISTOR >			
VD5301	1-803-974-21	VARISTOR, CHIP(1608)			
VD5302	1-803-974-21	VARISTOR, CHIP(1608)			
VD5303	1-803-974-21	VARISTOR, CHIP(1608)			
	A-7013-779-A	LB-085(BW)BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C5601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5602	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
CN5601	1-779-334-11	CONNECTOR, FFC/FPC 20P			
CN5602	1-691-354-21	CONNECTOR, FFC/FPC(ZIF)16P			
		< DIODE >			
D5601	8-719-064-07	DIODE	SML-310LTT86		
D5602	6-500-374-01	DIODE	NSCW455T-TC8		
		< IC >			
IC5601	8-759-581-11	IC	NJM2125F(TE2)		

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Ref. No.	Part No.	Description			
		< TRANSISTOR >			
Q5602	8-759-054-48	TRANSISTOR	UP04601008S0		
		< RESISTOR >			
R5602	1-218-947-11	RES-CHIP	330	5%	1/16W
R5603	1-208-941-11	METAL CHIP	180K	0.5%	1/16W
R5604	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R5605	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R5606	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5607	1-211-983-11	METAL CHIP	39	0.5%	1/10W
	A-7013-812-A	MA-421(MSNASHI)BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C5404	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C5501	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5502	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5503	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5504	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5506	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5510	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5511	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5512	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C5513	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C5514	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5516	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C5517	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C5519	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5520	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5521	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5523	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5528	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C5529	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C5532	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C5535	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C5537	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
		< CONNECTOR >			
CN5401	1-778-507-21	PIN, CONNECTOR(PC BOARD)4P			
CN5402	1-815-235-11	CONNECTOR, FFC/FPC(ZIF)37P			
		< DIODE >			
D5401	6-500-506-01	DIODE TLRMV1021(T15SOY,F)			
D5403	6-500-289-01	DIODE MAZW082H0LS0			
D5404	8-719-073-01	DIODE MA111-(K8).S0			
D5405	6-500-512-01	DIODE CL-330IRS-X-TU			
D5408	8-719-056-85	DIODE UDZSTE-178.2B			
D5409	8-719-056-85	DIODE UDZSTE-178.2B			
D5410	8-719-056-85	DIODE UDZSTE-178.2B			
		< FERRITE BEAD >			
FB5401	1-469-179-21	FERRITE	0uH		
FB5402	1-469-179-21	FERRITE	0uH		
FB5403	1-469-179-21	FERRITE	0uH		
FB5404	1-469-179-21	FERRITE	0uH		
FB5405	1-500-444-11	FERRITE	0uH		
FB5406	1-500-444-11	FERRITE	0uH		
FB5407	1-500-444-11	FERRITE	0uH		
FB5408	1-500-444-11	FERRITE	0uH		
FB5409	1-500-444-11	FERRITE	0uH		
FB5410	1-500-444-11	FERRITE	0uH		
FB5411	1-500-444-11	FERRITE	0uH		
		< IC >			
IC5401	6-600-047-01	IC RS-670			
IC5501	8-759-679-11	IC BH7870AKV-E2			
		< JACK >			
J5401	1-691-737-41	JACK(SMALL TYPE)(MIC(PLUG IN POWER)			
J5402	1-793-995-11	JACK, SUPER SMALL TYPE(LANC)			
J5404	1-694-688-11	TERMINAL, S(S VIDEO OUT)			
J5405	1-569-950-41	JACK(SMALL TYPE)(HEAD PHONES)			
		< COIL >			
L5501	1-469-528-91	INDUCTOR	100uH		
		< RESISTOR >			
R5401	1-216-864-11	METAL CHIP	0	5%	1/16W
R5402	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R5403	1-216-864-11	METAL CHIP	0	5%	1/16W
R5405	1-216-805-11	METAL CHIP	47	5%	1/16W
R5407	1-216-864-11	METAL CHIP	0	5%	1/16W
R5408	1-216-864-11	METAL CHIP	0	5%	1/16W
R5501	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5502	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R5503	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5504	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R5505	1-218-990-11	SHORT CHIP	0		
R5506	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5507	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5508	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R5509	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R5510	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5511	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5515	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5517	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5520	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R5521	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R5522	1-218-990-11	SHORT CHIP	0		
R5524	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5525	1-218-966-11	RES-CHIP	12K	5%	1/16W
R5527	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R5530	1-218-990-11	SHORT CHIP	0		
R5531	1-218-990-11	SHORT CHIP	0		
R5532	1-218-990-11	SHORT CHIP	0		
R5533	1-218-990-11	SHORT CHIP	0		
R5534	1-218-990-11	SHORT CHIP	0		
		< SENSOR >			
SE5401	1-476-807-31	SENSOR, ANGULAR VELOCITY(YAW)			
SE5402	1-476-807-41	SENSOR, ANGULAR VELOCITY(PITCH)			

Ref. No.	Part No.	Description			
		< VARISTOR >			
VD5401	1-801-862-11	VARISTOR, CHIP(1608)			
VD5402	1-801-862-11	VARISTOR, CHIP(1608)			
VD5403	1-801-923-11	VARISTOR, CHIP(1608)			
VD5407	1-803-974-21	VARISTOR, CHIP(1608)			
VD5408	1-803-974-21	VARISTOR, CHIP(1608)			
VD5409	1-801-862-11	VARISTOR, CHIP(1608)			
VD5410	1-801-862-11	VARISTOR, CHIP(1608)			
	A-7013-528-A	PD-188 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C6001	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6002	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C6003	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6004	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6005	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6007	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6008	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6009	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C6010	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C6011	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C6012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6013	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C6014	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C6015	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C6016	1-165-908-91	CERAMIC CHIP	1uF	10%	10V
C6017	1-165-908-91	CERAMIC CHIP	1uF	10%	10V
C6018	1-165-908-91	CERAMIC CHIP	1uF	10%	10V
C6019	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C6022	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6023	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C6024	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C6101	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C6103	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C6104	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
⚠C6105	1-100-371-11	CERAMIC CHIP	12PF	5%	3.15KV
		< CONNECTOR >			
CN6001	1-815-031-11	CONNECTOR, FFC/FPC(ZIF)24P			
CN6101	1-764-709-11	CONNECTOR, FFC/FPC(LIF)10P			
CN6201	1-794-997-11	PIN, CONNECTOR 20P			
CN6202	1-794-376-21	PIN, CONNECTOR 4P			
CN6203	1-691-344-11	CONNECTOR, FFC/FPC(ZIF)6P			
		< DIODE >			
D6001	8-719-084-47	DIODE 1SV290(TPL3)			
D6003	8-719-050-42	DIODE RD3.3UM-T1B			
D6103	8-719-073-01	DIODE MA111-(K8).S0			
D6201	8-719-056-85	DIODE UDZSTE-178.2B			
		< FERRITE BEAD >			
FB6001	1-414-760-21	FERRITE	0uH		
FB6002	1-414-760-21	FERRITE	0uH		

Ref. No.	Part No.	Description			
		< IC >			
IC6001	8-752-109-08	IC CXA3289BR-T4			
IC6002	8-752-407-33	IC CXD3512R-T4			
IC6101	8-759-564-49	IC TC7W53FU(TE12R)			
IC6102	8-759-075-70	IC TA75S393F-TE85R			
		< COIL >			
L6001	1-469-525-91	INDUCTOR	10uH		
L6002	1-412-949-21	INDUCTOR	6.8uH		
L6101	1-428-878-11	INDUCTOR	82uH		
		< TRANSISTOR >			
Q6001	8-759-054-48	TRANSISTOR	UP04601008S0		
Q6002	8-759-054-48	TRANSISTOR	UP04601008S0		
Q6003	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q6004	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q6005	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q6101	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q6102	6-550-065-01	TRANSISTOR	CPH5504-TL-E		
		< RESISTOR >			
R6001	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R6002	1-218-985-11	RES-CHIP	470K	5%	1/16W
R6003	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6004	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6006	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R6007	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6008	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6009	1-218-975-11	RES-CHIP	68K	5%	1/16W
R6010	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6011	1-218-975-11	RES-CHIP	68K	5%	1/16W
R6012	1-218-989-11	RES-CHIP	1M	5%	1/16W
R6013	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6014	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6015	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6016	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6017	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6018	1-218-966-11	RES-CHIP	12K	5%	1/16W
R6019	1-218-989-11	RES-CHIP	1M	5%	1/16W
R6020	1-218-975-11	RES-CHIP	68K	5%	1/16W
R6021	1-218-979-11	RES-CHIP	150K	5%	1/16W
R6022	1-208-957-11	RES-CHIP	820K	5%	1/16W
R6023	1-218-990-11	SHORT CHIP	0		
R6103	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6104	1-218-980-11	RES-CHIP	180K	5%	1/16W
R6105	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6106	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R6107	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6108	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6110	1-218-949-11	RES-CHIP	470	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB6001	1-234-372-21	RES, NETWORK 100X4(1005)			

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			
		< TRANSFORMER >			
⚠T6101	1-435-786-31	TRANSFORMER, INVERTER			
	A-7013-780-A	VA-118(MD)BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C4001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4005	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4109	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
C4110	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4111	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C4112	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4113	1-164-854-11	CERAMIC CHIP	15PF	5%	50V
C4114	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4115	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4116	1-164-854-11	CERAMIC CHIP	15PF	5%	50V
C4117	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4203	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4204	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4205	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4206	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4207	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C4208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4209	1-113-986-11	TANTAL. CHIP	2.2uF	20%	25V
C4210	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C4211	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C4212	1-164-876-11	CERAMIC CHIP	120PF	5%	50V
C4213	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C4214	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C4215	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C4216	1-109-994-11	CERAMIC CHIP	2.2uF	10%	10V
C4217	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C4301	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4302	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4303	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C4304	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C4305	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4306	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4307	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4308	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4309	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4310	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4311	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4312	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4314	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4501	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4502	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4503	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C4504	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C4505	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4506	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4507	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4508	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V

Ref. No.	Part No.	Description			
C4509	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4510	1-164-934-11	CERAMIC CHIP	330PF	10%	50V
C4511	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4512	1-165-908-91	CERAMIC CHIP	1uF	10%	10V
C4513	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C4514	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4515	1-165-908-91	CERAMIC CHIP	1uF	10%	10V
C4516	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C4517	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C4518	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4520	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C4521	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4522	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4523	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4526	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4527	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C4528	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C4529	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4530	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4531	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4532	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4533	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4535	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4536	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4537	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C4538	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C4539	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C4540	1-125-827-91	CERAMIC CHIP	1uF	10%	25V
C4541	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4542	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4543	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4544	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4545	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4546	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4547	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4548	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C4549	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4550	1-113-988-11	TANTAL. CHIP	68uF	20%	4V
C4551	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4553	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C4554	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4555	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C4557	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C4558	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4559	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4560	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4562	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4603	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C4604	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C4605	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C4606	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C4607	1-109-982-11	CERAMIC CHIP	1uF	10%	10V

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

VA-118

Ref. No.	Part No.	Description		
		< CONNECTOR >		
CN4001	1-691-374-11	CONNECTOR, FFC/FPC 10P		
CN4002	1-766-613-21	CONNECTOR, FFC/FPC 36P		
CN4003	1-794-998-31	PIN, CONNECTOR 20P		
CN4004	1-774-603-21	CONNECTOR, BOARD TO BOARD 100P		
CN4005	1-691-354-21	CONNECTOR, FFC/FPC(ZIF)16P		
CN4201	1-766-350-21	CONNECTOR, FFC/FPC 20P		
* CN4602	1-580-056-21	PIN, CONNECTOR(SMD)3P		
* CN4603	1-580-056-21	PIN, CONNECTOR(SMD)3P		
		< DIODE >		
D4001	6-500-289-01	DIODE MAZW082H0LS0		
D4002	6-500-289-01	DIODE MAZW082H0LS0		
D4101	8-719-073-01	DIODE MA111-(K8).S0		
D4102	8-719-056-85	DIODE UDZSTE-178.2B		
D4103	8-719-056-85	DIODE UDZSTE-178.2B		
D4201	8-719-084-47	DIODE 1SV290(TPL3)		
D4502	8-719-421-27	DIODE MA728-(K8).S0		
D4503	6-500-314-01	DIODE DAN222MT2L		
D4504	8-719-074-08	DIODE MA4ZD03001S0		
D4507	8-719-074-08	DIODE MA4ZD03001S0		
D4601	6-500-289-01	DIODE MAZW082H0LS0		
D4602	8-719-081-19	DIODE 1SS383(T5RSONY1)		
D4603	8-719-056-23	DIODE 1SS387-TPL3		
D4604	8-719-056-23	DIODE 1SS387-TPL3		
		< FUSE >		
⚠F4601	1-576-406-21	FUSE	1.4A	32V
⚠F4602	1-576-406-21	FUSE	1.4A	32V
⚠F4603	1-576-406-21	FUSE	1.4A	32V
⚠F4604	1-576-406-21	FUSE	1.4A	32V
⚠F4605	1-576-406-21	FUSE	1.4A	32V
		< FERRITE BEAD >		
FB4201	1-469-676-22	FERRITE	0uH	
FB4202	1-500-329-21	FERRITE	0uH	
		< IC >		
IC4101	6-803-026-01	IC MB89097PFV-G-155-BND-ER-E1		
IC4201	8-752-109-08	IC CXA3289BR-T4		
IC4202	8-752-405-57	IC CXD3501AR-T4		
IC4301	8-759-489-19	IC NJM3230V(TE2)		
IC4502	6-703-429-01	IC MB44A120APFV-G-BND-ERE1		
IC4504	6-703-227-01	IC TK11131CSCL-G		
		< COIL >		
L4201	1-469-525-91	INDUCTOR	10uH	
L4202	1-469-891-21	INDUCTOR	6.8uH	
L4301	1-469-570-21	INDUCTOR	10uH	
L4501	1-416-670-11	INDUCTOR	33uH	
L4502	1-416-669-11	INDUCTOR	22uH	
L4503	1-416-669-11	INDUCTOR	22uH	
L4504	1-416-669-11	INDUCTOR	22uH	
L4505	1-416-670-11	INDUCTOR	33uH	
L4506	1-416-669-11	INDUCTOR	22uH	
L4507	1-416-670-11	INDUCTOR	33uH	

Ref. No.	Part No.	Description	
L4508	1-469-524-91	INDUCTOR	4.7uH
L4509	1-469-524-91	INDUCTOR	4.7uH
L4510	1-469-757-21	INDUCTOR	10uH
L4511	1-469-524-91	INDUCTOR	4.7uH
L4512	1-469-524-91	INDUCTOR	4.7uH
L4513	1-469-524-91	INDUCTOR	4.7uH
L4514	1-469-524-91	INDUCTOR	4.7uH
L4515	1-469-526-91	INDUCTOR	22uH
L4516	1-469-524-91	INDUCTOR	4.7uH
L4517	1-469-524-91	INDUCTOR	4.7uH
L4518	1-469-524-91	INDUCTOR	4.7uH
L4519	1-469-524-91	INDUCTOR	4.7uH
L4520	1-469-524-91	INDUCTOR	4.7uH
L4521	1-469-524-91	INDUCTOR	4.7uH
L4601	1-412-056-11	INDUCTOR	4.7uH
		< LINE FILTER >	
LF4602	1-456-391-21	INDUCTOR	0uH
		< TRANSISTOR >	
Q4001	6-550-102-01	TRANSISTOR	2SC5663T2L
Q4002	6-550-235-01	TRANSISTOR	UNR32A500LS0
Q4003	6-550-238-01	TRANSISTOR	DTA114EMT2L
Q4004	8-729-053-57	TRANSISTOR	RN1902FE(TPLR3)
Q4005	8-729-054-44	TRANSISTOR	UP04111008S0
Q4101	8-729-041-43	TRANSISTOR	HN1L02FU(TE85R)
Q4504	6-550-405-01	TRANSISTOR	CPH5815-TL-E
Q4505	6-550-405-01	TRANSISTOR	CPH5815-TL-E
Q4506	6-550-405-01	TRANSISTOR	CPH5815-TL-E
Q4507	6-550-405-01	TRANSISTOR	CPH5815-TL-E
Q4508	6-550-405-01	TRANSISTOR	CPH5815-TL-E
Q4509	6-550-405-01	TRANSISTOR	CPH5815-TL-E
Q4510	6-550-560-01	TRANSISTOR	CPH5819-TL-E
Q4513	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R
Q4514	8-729-101-07	TRANSISTOR	2SB798-T1-DLDK
Q4515	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R
Q4516	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R
Q4517	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R
Q4518	8-759-054-50	TRANSISTOR	UP04501008S0
Q4519	8-759-054-50	TRANSISTOR	UP04501008S0
Q4520	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R
Q4521	8-729-054-49	TRANSISTOR	UP04401008S0
Q4524	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L
Q4525	8-759-054-50	TRANSISTOR	UP04501008S0
Q4526	6-550-406-01	TRANSISTOR	MCH3335-S-TL-E
Q4601	8-729-047-68	TRANSISTOR	SSM3K03FE(TPL3)
Q4602	6-550-404-01	TRANSISTOR	UPA1858GR-9JG-E2-A
Q4603	8-729-101-07	TRANSISTOR	2SB798-T1-DLDK
Q4604	6-550-234-01	TRANSISTOR	UNR32A300LS0
Q4608	8-729-056-19	TRANSISTOR	TPC6101(TE85R)
Q4610	6-550-234-01	TRANSISTOR	UNR32A300LS0

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			
		< RESISTOR >			
R4002	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4004	1-216-009-91	RES-CHIP	22	5%	1/10W
R4005	1-216-009-91	RES-CHIP	22	5%	1/10W
R4006	1-218-939-11	RES-CHIP	68	5%	1/16W
R4007	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R4008	1-218-990-11	SHORT CHIP	0		
R4009	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4103	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4104	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4105	1-218-990-11	SHORT CHIP	0		
R4106	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4109	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4110	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4111	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4112	1-218-989-11	METAL CHIP	1M	0.5%	1/16W
R4113	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4114	1-219-570-11	METAL CHIP	10M	5%	1/10W
R4115	1-218-985-11	METAL CHIP	470K	0.5%	1/16W
R4116	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4117	1-218-990-11	SHORT CHIP	0		
R4118	1-216-857-11	METAL CHIP	1M	5%	1/16W
R4119	1-218-949-11	RES-CHIP	470	5%	1/16W
R4120	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4121	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4122	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4123	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4124	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4201	1-218-985-11	RES-CHIP	470K	5%	1/16W
R4203	1-218-990-11	SHORT CHIP	0		
R4204	1-218-990-11	SHORT CHIP	0		
R4206	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R4207	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4208	1-218-975-11	RES-CHIP	68K	5%	1/16W
R4209	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4210	1-218-975-11	RES-CHIP	68K	5%	1/16W
R4211	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4212	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4213	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4214	1-218-989-11	METAL CHIP	1M	0.5%	1/16W
R4215	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4301	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4302	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4303	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4304	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4501	1-220-200-81	RES-CHIP	30K	5%	1/16W
R4502	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4503	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4504	1-218-990-11	SHORT CHIP	0		
R4505	1-218-990-11	SHORT CHIP	0		
R4506	1-218-990-11	SHORT CHIP	0		
R4507	1-218-990-11	SHORT CHIP	0		
R4508	1-218-990-11	SHORT CHIP	0		
R4509	1-218-990-11	SHORT CHIP	0		
R4510	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4511	1-218-970-11	RES-CHIP	27K	5%	1/16W

Ref. No.	Part No.	Description			
R4512	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4513	1-218-971-11	RES-CHIP	33K	5%	1/16W
R4514	1-218-972-11	RES-CHIP	39K	5%	1/16W
R4515	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4516	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4517	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R4518	1-208-910-11	RES-CHIP	9.1K	5%	1/16W
R4519	1-218-990-11	SHORT CHIP	0		
R4520	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4522	1-218-990-11	SHORT CHIP	0		
R4523	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4524	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R4525	1-218-990-11	SHORT CHIP	0		
R4526	1-218-935-11	RES-CHIP	33	5%	1/16W
R4537	1-218-966-11	RES-CHIP	12K	5%	1/16W
R4538	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4539	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4540	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4541	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4543	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4545	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4546	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4547	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4549	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4550	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R4551	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4552	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4553	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4554	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R4555	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4556	1-218-967-11	RES-CHIP	15K	5%	1/16W
R4557	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R4561	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4562	1-218-949-11	RES-CHIP	470	5%	1/16W
R4563	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R4564	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R4567	1-218-990-11	SHORT CHIP	0		
R4601	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4604	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4605	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4607	1-216-797-11	METAL CHIP	10	5%	1/16W
R4608	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R4609	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R4611	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4614	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4615	1-218-965-11	RES-CHIP	10K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB4101	1-234-378-21	RES, NETWORK 10KX4		(1005)	
RB4104	1-234-375-21	RES, NETWORK 1KX4		(1005)	
RB4105	1-234-375-21	RES, NETWORK 1KX4		(1005)	
RB4106	1-234-375-21	RES, NETWORK 1KX4		(1005)	
RB4107	1-234-375-21	RES, NETWORK 1KX4		(1005)	
RB4108	1-234-375-21	RES, NETWORK 1KX4		(1005)	
RB4109	1-234-381-21	RES, NETWORK 100KX4		(1005)	
RB4201	1-234-372-21	RES, NETWORK 100X4		(1005)	
RB4301	1-234-379-21	RES, NETWORK 22KX4		(1005)	

VA-118 **VC-311**

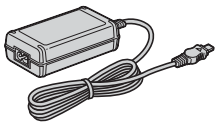
Ref. No.	Part No.	Description
		< VIBRATOR >
X4101	1-760-458-21	VIBRATOR, CRYSTAL(32.768KHZ)
X4102	1-795-244-11	VIBRATOR, CERAMIC(10MHz)
	A-7016-786-A	VC-311(DVO)BOARD, COMPLETE (TRV12E/TRV14E)
		**********
	A-7016-562-A	VC-311(DVIO)BOARD, COMPLETE (TRV19/TRV19E)
		**********

Electrical parts list of the VC-311 board are not shown.
Pages from 5-21 to 5-24 are not shown.

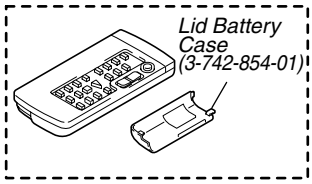
Checking supplied accessories.

Make sure that the following accessories are supplied with your camcorder.

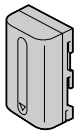
Power cord (Main lead)(1)
(AUS model)
⚠ 1-696-819-21
Power cord (Main lead)(1)
(AEP, E, EE, NE model)
⚠ 1-769-608-11
Power cord (Main lead)(1)
(CH model)
⚠ 1-782-476-11
Power cord (Main lead)(1)
(UK, HK model)
⚠ 1-783-374-11
Power cord (Main lead)(1)
(US, CND model)
⚠ 1-790-107-22
Power cord (Main lead)(1)
(KR model)
⚠ 1-776-985-11



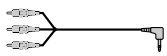
AC power adaptor (1) (AC-L15A)
(US, CND, AEP, UK, E, HK, AUS, EE, NE, KR model)
⚠ 1-477-533-31
AC power adaptor (1) (AC-L15A)
(CH model)
⚠ 1-477-533-41



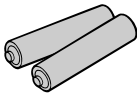
Wireless Remote Commander (1)
(RMT-814E)
1-475-141-61
(EXCEPT DCR-TRV12E)



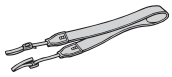
NP-FM30 battery pack (1)
⚠ A-7069-387-A (US, CND)
⚠ A-7096-388-B (EXCEPT US,CND)



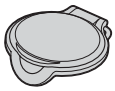
A/V connecting cable (1.5m) (1)
1-824-097-11



R6 (size AA) batteries for the Remote Commander (2)
(not supplied)



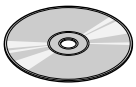
Shoulder strap (1)
3-987-015-01



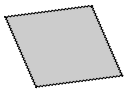
Lens cap (1)
X-3953-088-1

Shoe cover (1)
3-080-571-01

USB cable (1)
1-823-931-11

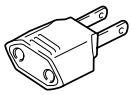


CD-ROM
(SPVD-010 USB Driver) (1)
(EXCEPT US, CND model)
3-078-942-03
CD-ROM
(SPVD-010(I) USB Driver) (1)
(US,CND model)
3-078-943-03



Cleaning cloth (1)
3-073-861-01

21-pin adaptor (1)
(AEP, UK, EE, NE model)
1-770-783-21



2-pin conversion adaptor (1)
(E,HK only)
1-569-008-12

• Abbreviation

CND	: Canadian model	AUS	: Australian model
EE	: East European model	CH	: Chinese model
NE	: North European model	KR	: Korea model
HK	: Hong Kong model		

Other accessories

3-080-368-11 MANUAL, INSTRUCTION(ENGLISH/FRENCH) (TRV12E:AEP/TRV14E:AEP,UK/TRV19E:AEP, UK,E,HK,AUS,CH)
3-080-368-21 MANUAL, INSTRUCTION(SPANISH/PORTUGUESE) (TRV12E:AEP/TRV14E:AEP/TRV19E:AEP)
3-080-368-31 MANUAL, INSTRUCTION(ITALIAEN/GREEK) (TRV12E:AEP/TRV14E:AEP/TRV19E:AEP)
3-080-368-41 MANUAL, INSTRUCTION(GERMAN/DUTCH) (TRV12E:AEP/TRV14E:AEP/TRV19E:AEP)
3-080-368-51 MANUAL, INSTRUCTION(SWEDISH/RUSSIAN) (TRV12E:NE/TRV14E:NE/TRV19E:NE,E)
3-080-368-61 MANUAL, INSTRUCTION(DANISH/FINNISH) (TRV12E:NE/TRV14E:NE/TRV19E:NE)
3-080-368-71 MANUAL, INSTRUCTION(ARABIC/PERSIAN)(TRV19E:E)
3-080-368-81 MANUAL, INSTRUCTION(TRADITIONAL CHINESE) (TRV19E:HK)
3-080-368-91 MANUAL, INSTRUCTION(SIMPLIFIED CHINESE) (TRV19E:E,CH)
3-080-369-11 MANUAL, INSTRUCTION(ENGLISH) (TRV19:US,CND,E,HK)
3-080-369-21 MANUAL, INSTRUCTION(FRENCH)(TRV19:CND)
3-080-369-31 MANUAL, INSTRUCTION(SPANISH/PORTUGUESE) (TRV19:E)
3-080-369-41 MANUAL, INSTRUCTION(TRADITIONAL CHINESE) (TRV19:E,HK)
3-080-369-51 MANUAL, INSTRUCTION(KOREAN)(TRV19:KR)
3-080-369-61 MANUAL, INSTRUCTION(ARABIC)(TRV19:E)

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-876-224-31

Sony EMCS Co.

2003B1600-1

Published by DI Customer Center

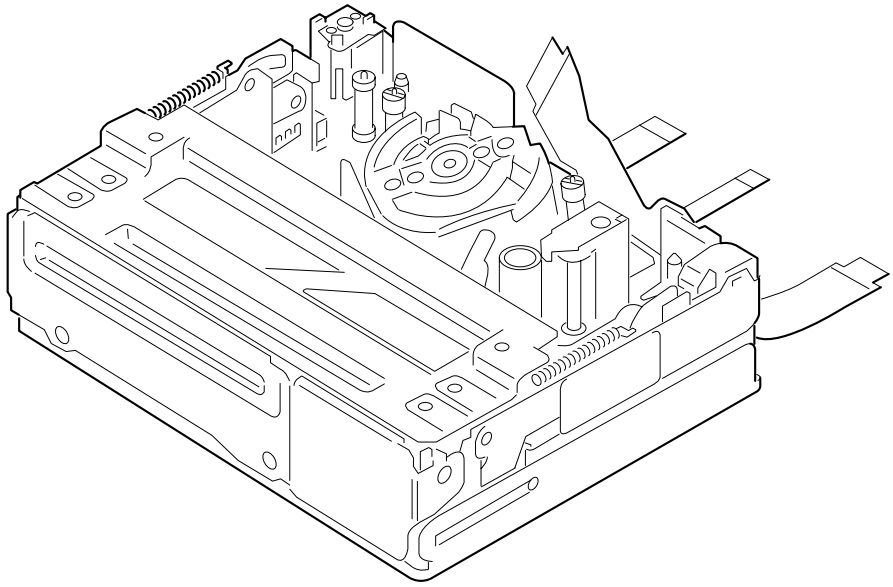
DV MECHANICAL ADJUSTMENT MANUAL VII

Ver 1.0 2003. 01

Z MECHANISM

Mini DV Digital Video Cassette

Please use this manual with the service manual of the respective models.



The capstan motor and the drum base block assy of this mechanism require very high precision work to install them in the mechanism. Therefore, the capstan motor and the drum base block assy are not supplied as the repair part independently. They are supplied as MD (Z100) SUB block assy.

Digital MECHANISM DECK

SONY

TABLE OF CONTENTS

1. Preparations for Check, Adjustment and Replacement of Mechanism Block

- Refer to the "DISASSEMBLY" section of the SERVICE MANUAL of the respective models for details of removing cabinets and printed wiring boards.
- When making any adjustment to a mechanism or replacing mechanical parts, be sure to use the Mode Selector II and select the appropriate status of the mechanical deck such that the mechanical status is suitable for the desired work. Refer to section "2-5. Mode Selector II" for details on how to enter the mode shown in a rectangle [____] mode in subsequent paragraphs of this manual.

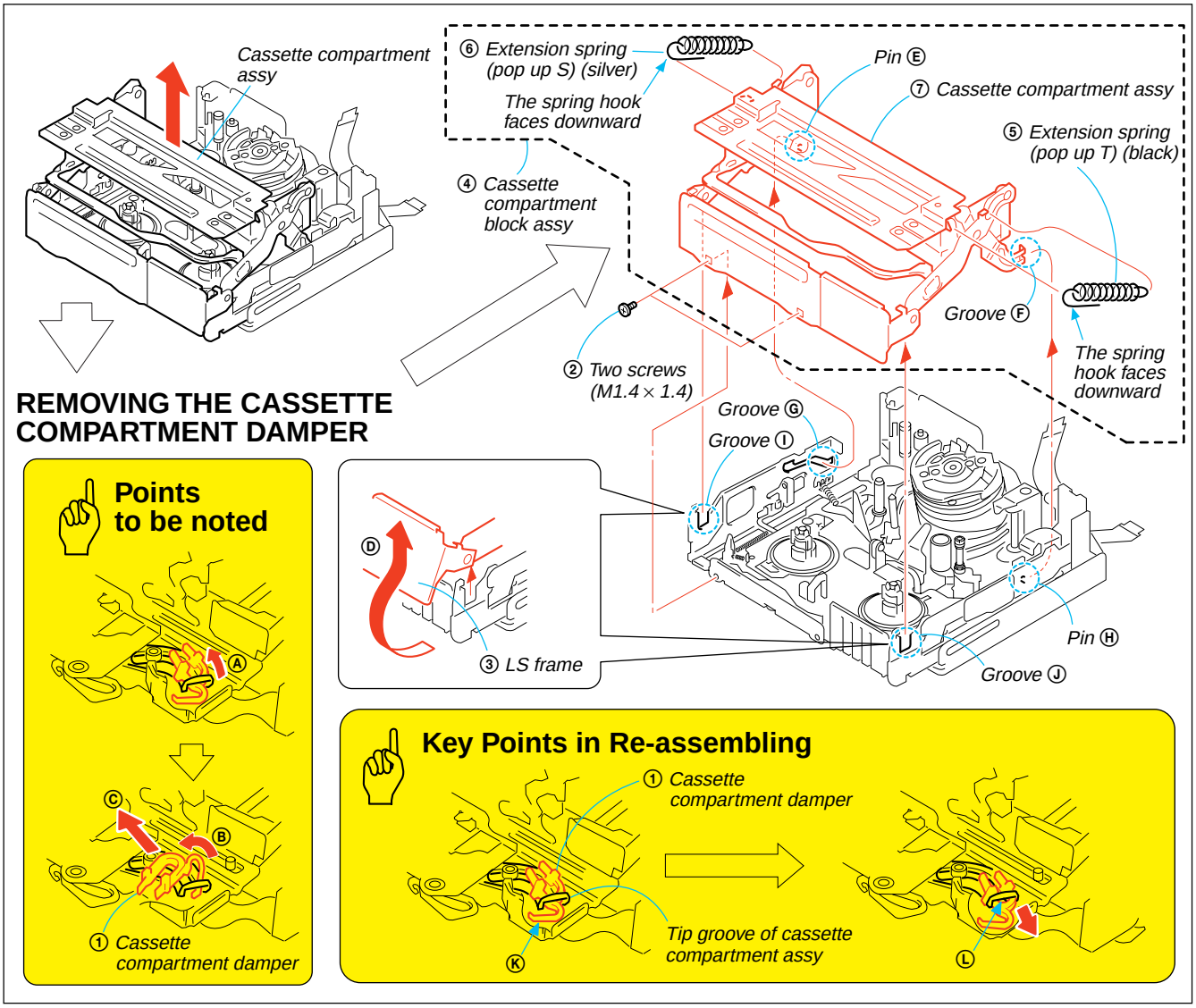
1-1. Cassette Compartment Assy, Damper Assy

1. Removal procedure

1) Set the [EJ] mode.
2) Press the cassette compartment down halfway. Pull the cassette compartment damper ① in the direction of the arrow Ⓐ. Then rotate it in the Ⓑ direction, and remove it in the direction of Ⓒ.
3) Remove the two screws (special head screw M1.4 × 1.4) ②.
4) Remove the LS chassis block assy ③ in the direction of the arrow Ⓓ.
5) Remove the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ from the LS chassis groove Ⓖ and pin Ⓗ. Then remove the cassette compartment block assy ④.
6) Remove the tension spring (POP UP T) (black) ⑤.
7) Remove the tension spring (POP UP S) (silver) ⑥.Then remove the cassette compartment assy ⑦.

2. Attachment procedure

1) Set the [ULE] mode.
2) Install the tension spring (cassette compartment S) (POP UP S) (silver) ⑥ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
3) Install the tension spring (cassette compartment T) (POP UP T) (black) ⑤ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
4) Install the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ into the LS chassis groove Ⓖ and pin Ⓗ.
5) In the status that the LS block assy ③ is kept open, insert it into the grooves Ⓘ and Ⓙ of the LS chassis block assy.
6) Close the LS chassis block assy ③ in the direction opposite to the arrow Ⓓ, and install it with the two screws (special head screw M1.4 × 1.4) ②.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
7) The cassette compartment down halfway. Pass the Ⓚ portion of the cassette compartment damper ① through the groove at the tip of the cassette compartment. Then pull the Ⓛ portion and fix it using tweezers or something.



2. Periodic Inspection and Maintenance

- Be sure to perform the following maintenance and inspection so that the machine delivers its full performance and functions, and to protect the machine and tape. Also, perform the following maintenance items after completing the repair work, regardless of the number of hours the machine has been operated by the user.

2-1. Rotary Drum Cleaning

1) Press a wiping cloth (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly against the rotary drum. Rotate the upper drum with a super-fine applicator slowly in the counter-clockwise direction to clean the rotary drum.

Caution: Never rotate the rotary drum by turning on the main power of the motor or rotate it in the clockwise direction. Never move the cloth vertically against the head tip, as this will surely damage the video head; the video head must not be cleaned by any other different methods.

2-2. Tape Path System Cleaning (Refer to Fig. 2-1.)

1) Set the EJECT state. Clean the tape running path (TG-1, -2, -3, -4, -5, -6 and -7, pinch roller and capstan shaft) and lower drum with a super-fine applicator (Ref. J-3) moistened with cleaning fluid.

Note 1: Be careful not to allow oil or grease of the various link mechanisms to get on the super-fine applicator (Ref. J-3).
Note 2: Once the super-fine applicator has been moistened with alcohol, do not use it to clean other mechanical parts such as the tape guide. However, the pinch roller is cleaned with alcohol.
Note 3: When cleaning the capstan shaft, be carefull not to move the oil seal. If the oil seal is moved, oil will leak.

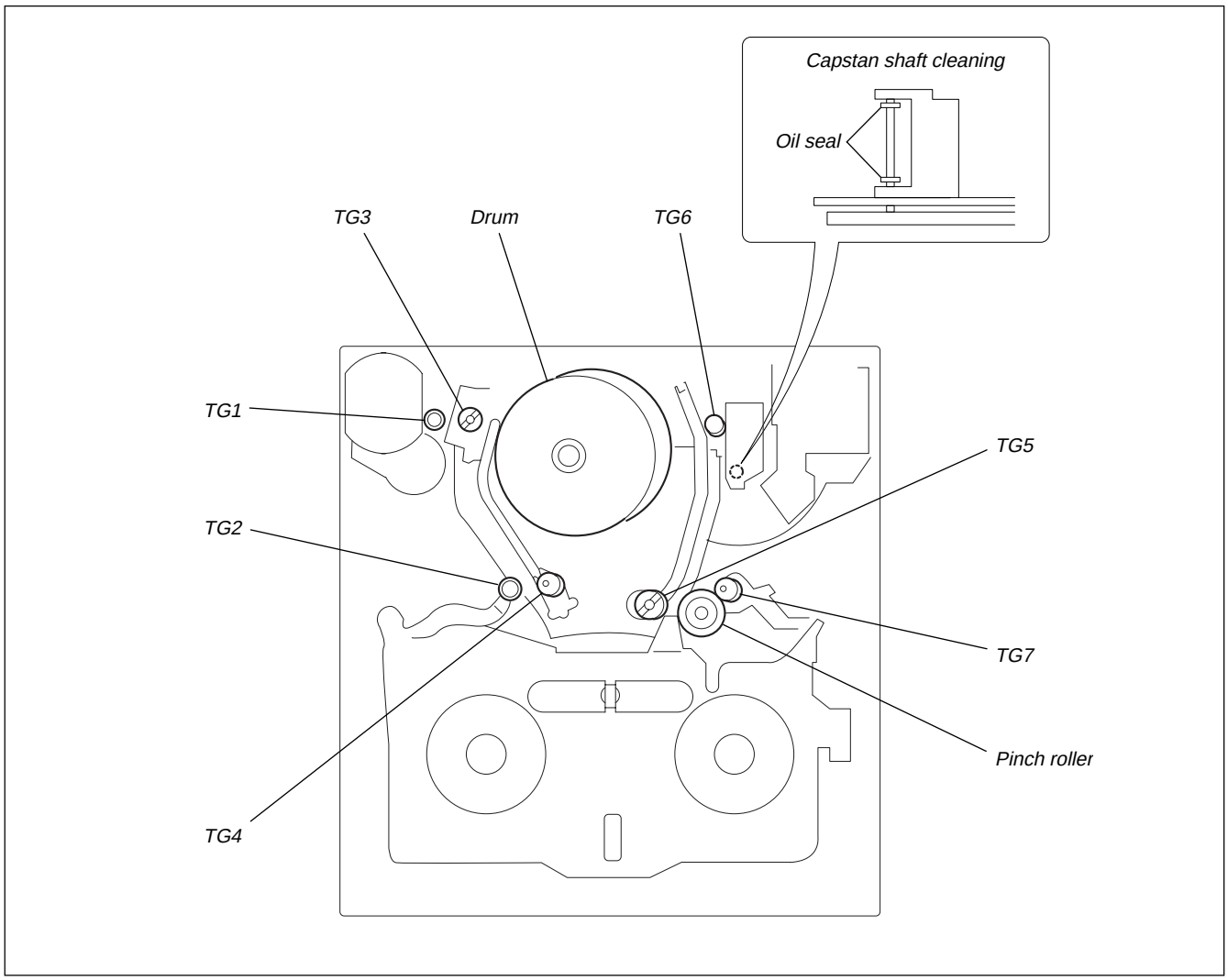


Fig. 2-1

2-3. Periodic Inspection List

Maintenance and inspection item		Operating hours (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Tape running surface cleaning	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
	Rotary drum cleaning and degaussing	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
Drive mechanism	Capstan bearing	—	☆	—	☆	—	☆	—	☆	—	☆	
Drive mechanism	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
Performance check	Back-tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning, ☆: Check

Note 1: When the machine is overhauled, replace the parts referring to the above list.

Note 2: Grease

- Be sure to use the specified grease only. (If grease of different viscosity is used, it can cause various troubles.)
- The grease must not contain any dust or other matter. (otherwise it can cause various trouble.)
- Observe the noted amount of grease. (otherwise the oozed grease can cause troubles.)
- Suncall FG-87HSR

2-4. Service Jigs and Tools

Ref. No.	Name	Part code	Jig inscription	Used for
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Wiping cloth	7-741-900-53		
J-3	Super-fine applicator (made by Nippon Applicator (P752D))	—		
J-4	Mirror (small oval type)	J-6080-840-A	GD-2038	Tape path
J-5	Tracking tape (XH2-1) (NTSC, PAL)	8-967-997-01		Tape path
J-6	Mini DV torque cassette	J-6082-360-A		
J-7	FWD/BACK T adjustment screwdriver	J-6082-187-A		For TG2 FWD position adjustment
J-8	Torque screwdriver	J-9049-330-A		
J-9	Tape path screwdriver	J-6082-026-A		For tape path adjustment
J-10	Adjustment remote commander (RM-95 upgraded)	J-6082-053-B		
J-11	Mode Selector II	J-6082-282-B		General adjustment (ROM version 1.8)
J-12	Mode Selector II conversion board (Z)	J-6082-493-A		
J-13	Mode Selector II ROM (supporting Z mechanism) * Note 1	J-6082-314-G		ROM for Mode Selector II

Other required equipment: Oscilloscope

Note 1: This is the ROM used for upgrading the version of Mode Selector II to enable it to be used for the Z mechanism.

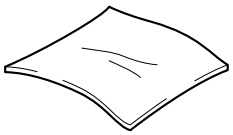
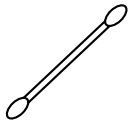
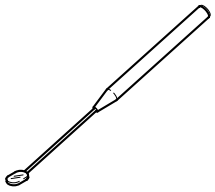
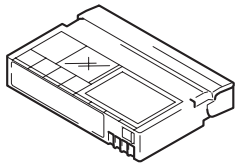
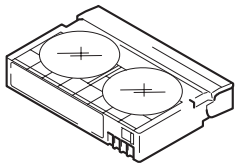
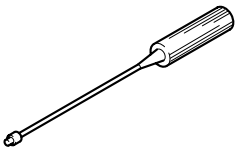
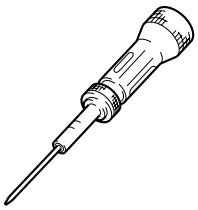
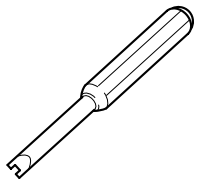
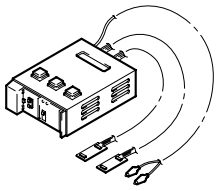
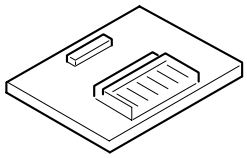
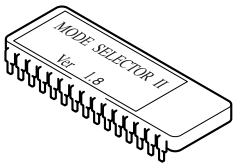
J-1 	***J-2*** 	***J-3*** 	***J-4*** 	***J-5*** 
J-6 	***J-7*** 	***J-8*** 	***J-9*** 	***J-10*** 
J-11 	***J-12*** 	***J-13*** 		

Fig. 2-2

2-5. Mode Selector II Operating Procedure

2-5-1. Introduction

The Mode Selector II is a mechanism drive tool that assists maintenance work of the various mechanism decks. It has the following functions.

1. Manual Test

In this mode, the motor of the mechanism deck is powered only during the period while the switch is turned on manually. Using the Manual Test, the operator can freely control the motor of the mechanism deck.

2. Step Test

In this mode, the motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information. The Step Test is used to confirm a series of movements of the mechanism deck.

3. Auto Test

The Mode Selector II stores the status transition table in its memory as data indicating the respective modes of the mechanism deck. The status transition table can be used to confirm whether a mechanism deck is operating normally or has abnormality from a series of movements of a mechanism deck. If an abnormal status transition is detected during operation, the "NG" indication appears and the mechanism stops moving.

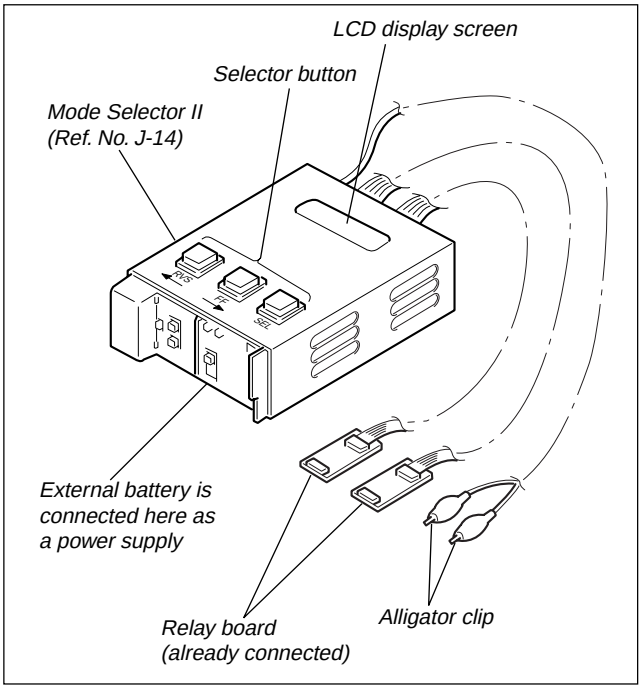


Fig. 2-3

Mode Selector II (J-6082-282-B) connection diagram

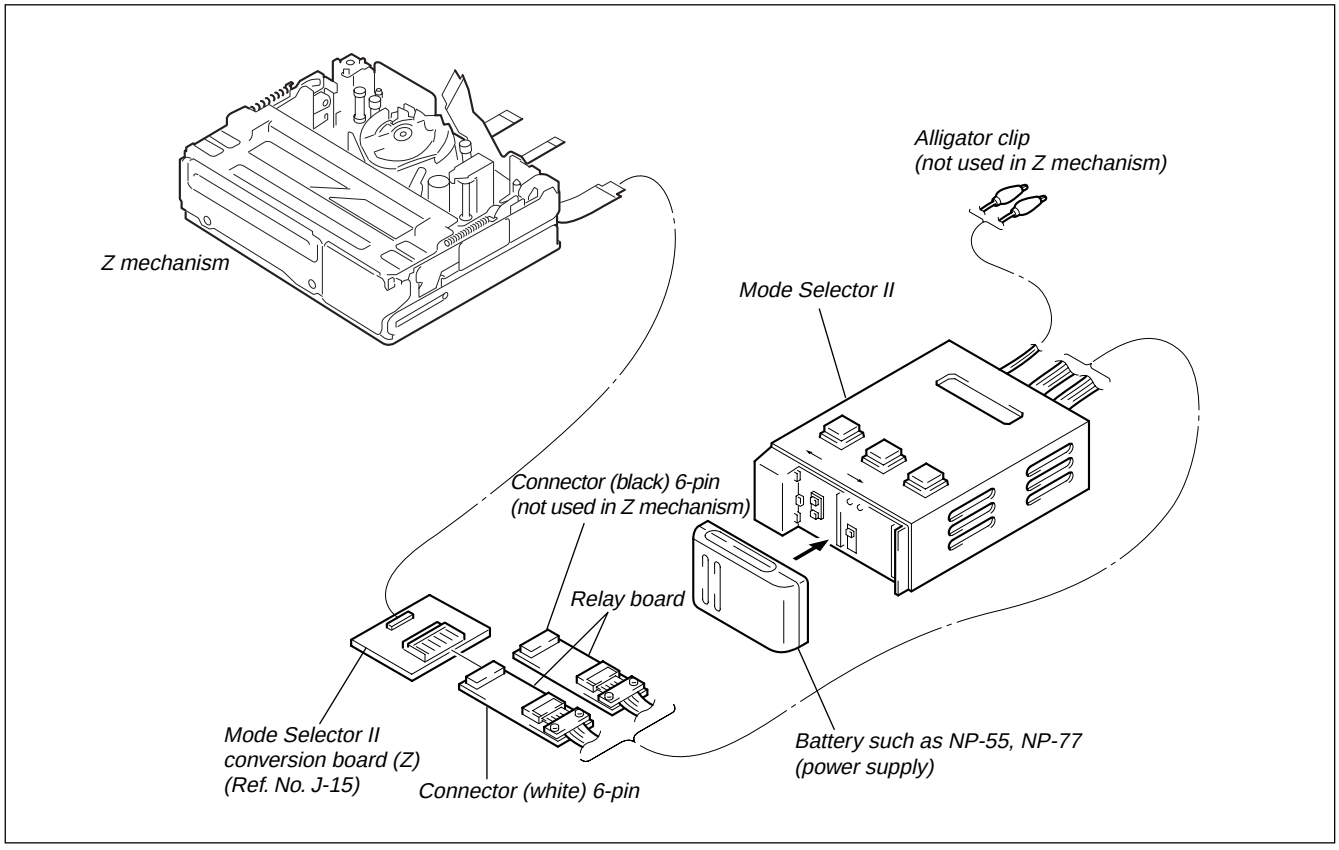
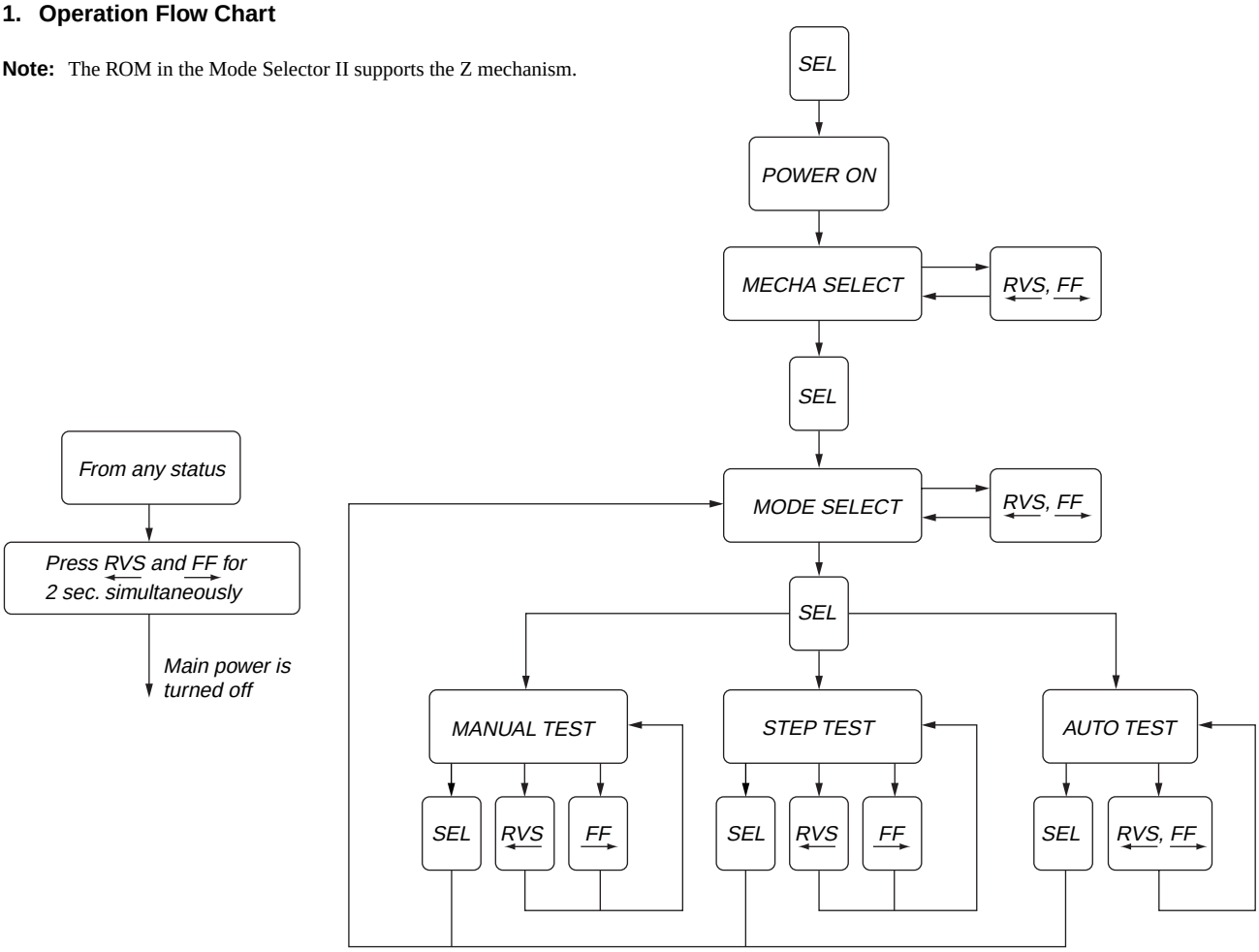


Fig. 2-4

2-5-2. Operation

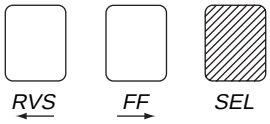
1. Operation Flow Chart

Note: The ROM in the Mode Selector II supports the Z mechanism.



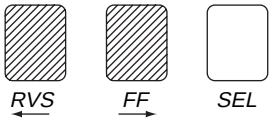
2. Mode Selector II Power On

Turn on the main power of the Mode Selector II as follows.
Press the SEL button.



3. Mode Selector II Power Off

Turn off the main power of the Mode Selector II as follows.
Press the RVS and FF buttons at the same time for 2 seconds or longer while the power is on.



4. Mecha Select

When the main power is turned on, the MECHA SELECT display appears on the LCD screen. Select the desired mechanism name using the RVS and FF buttons. Selection is complete when the SEL button is pressed. (Fig. A shows the Z mechanism.)

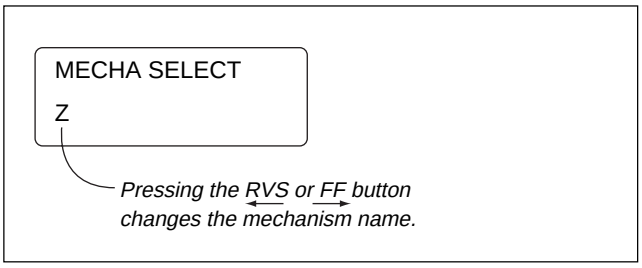


Fig. a

5. Test Type Select

Using the RVS and FF buttons, select a desired test type from the three types of "MANUAL", "STEP" and "AUTO". Selection is complete when the SEL button is pressed.

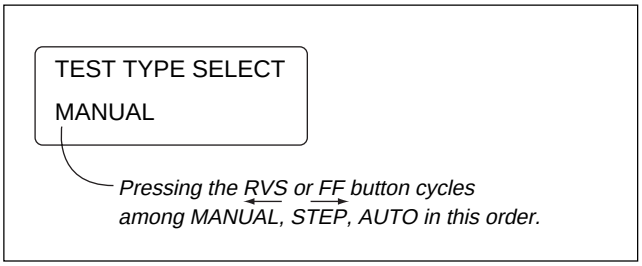


Fig. b

6. Manual Test

In this test, the motor of the mechanism deck is turned on only during the period while the RVS or FF button is pressed manually.

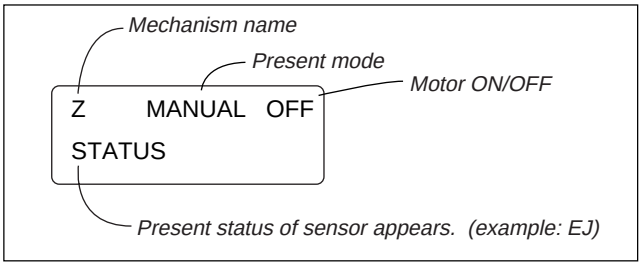


Fig. c

7. Step Test

In this test, the direction of motor movement is determined by the RVS and FF buttons. The motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information.

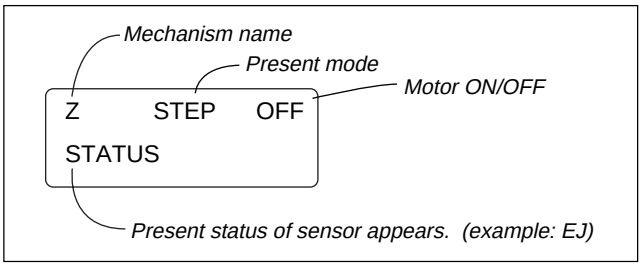


Fig. d

8. Auto Test

In this test, the mechanism deck is tested as to whether it performs a series of movements correctly in accordance with the operation sequence that is memorized earlier for each type of deck, by checking the output signals from sensors with the stored memory. Turning on the RVS or FF button performs the same operation.

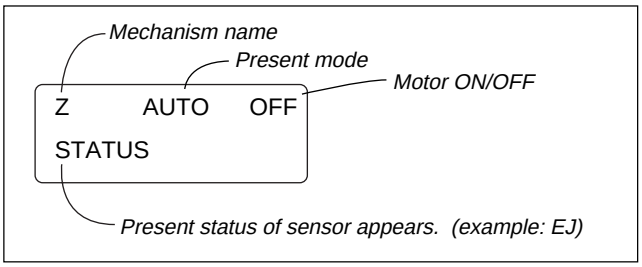


Fig. e

2-5-3. Mechanism Status (Position) Transition Table Using Mode Selector II

After selecting a mechanism deck, select either the MANUAL or STEP test (not AUTO) using the Mode Selector II. The desired mechanism status (position) can be specified by pressing the RVS or FF button. (The selected status appears on STATUS.)
EJ⟷ULE⟷SR⟷HL⟷STOP⟷R/P

MD name / Code				Z Mechanism
A	B	C		
0	1	0	1	EJ
1	1	0	2	ULE
1	0	0	3	SR
1	0	1	4	HL
0	0	1	5	STOP
0	1	1	6	R/P

2-5-4. Battery Alarm Indication

When the level of the battery used to supply power to this system decreases, this display appears asynchronously. When this happens, all operations are disabled and the battery must be replaced.

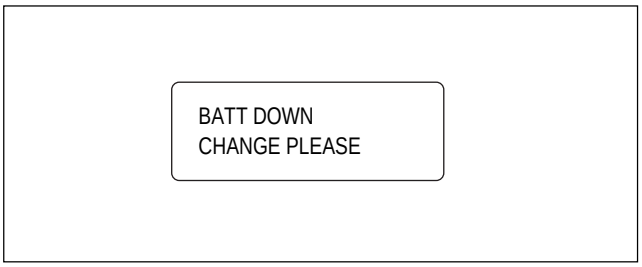
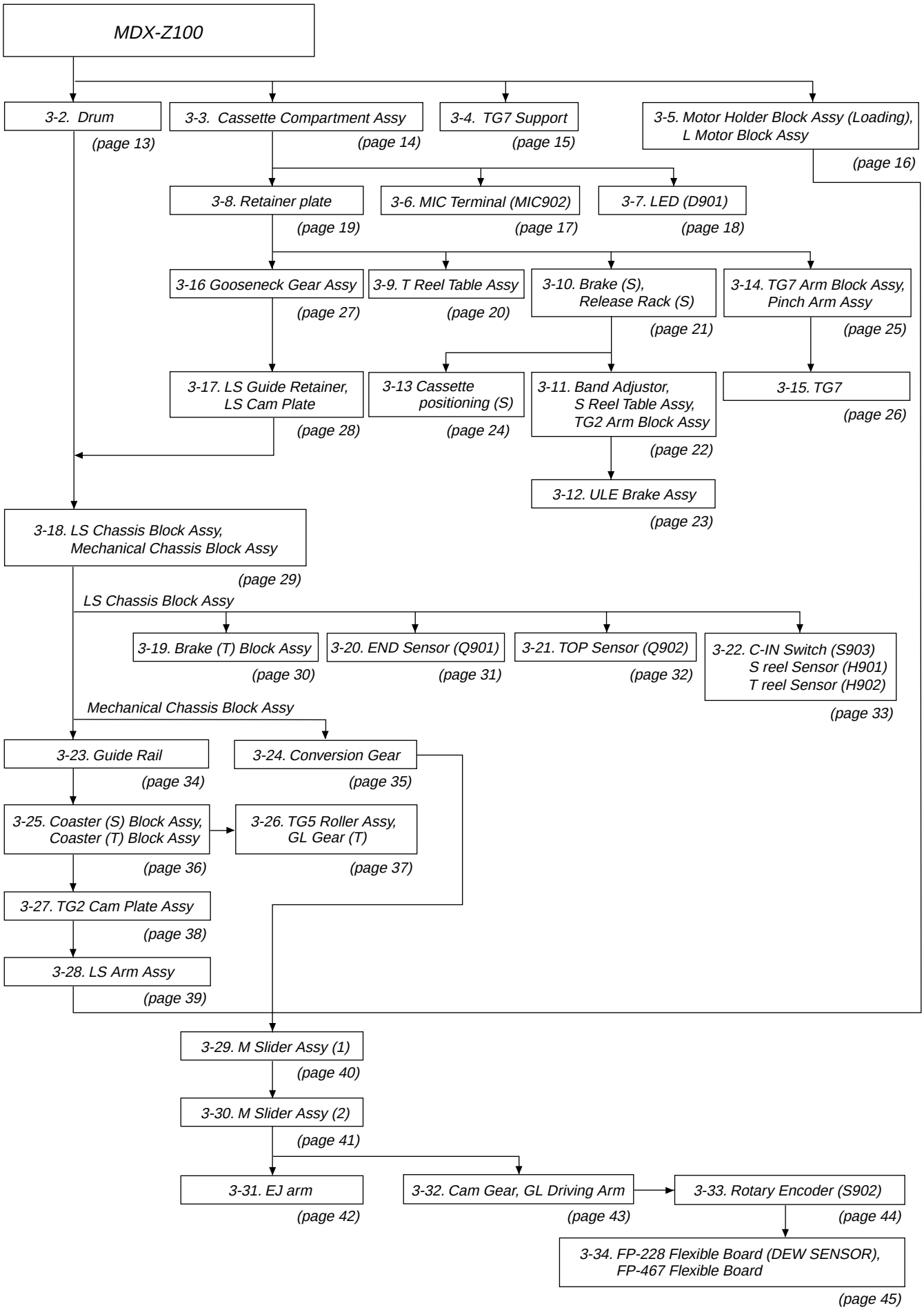


Fig. f

3. Check, Adjustment and Replacement of Mechanical Parts

3-1. Flowchart of Replacement of Mechanical Parts



3-2. Drum

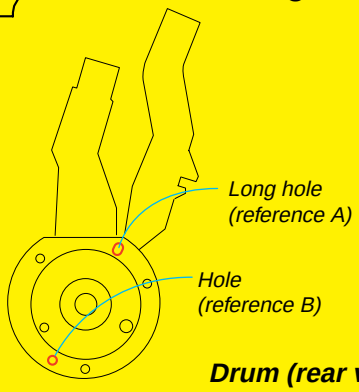
1. Removal procedure

1) Remove head drum flexible board Ⓒ from the notch of the mechanical chassis block assy.
2) Remove the drum fixing screw (M1.4 × 1.3) ① and remove the drum assy ②.

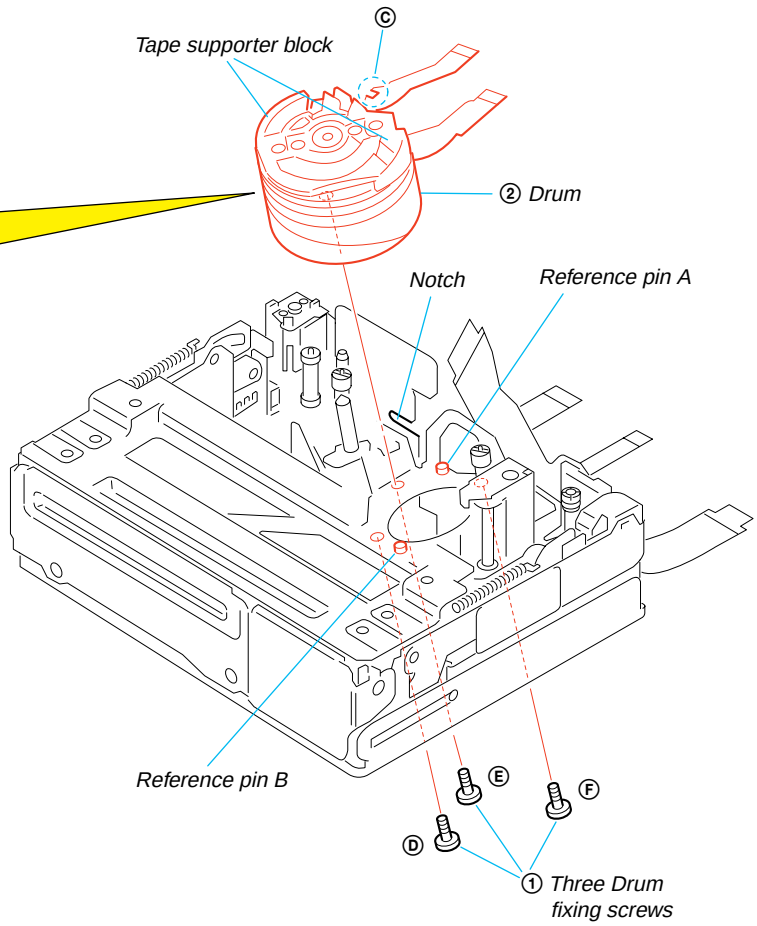
2. Attachment procedure

1) Ensure that head drum fixible board is hooked on the tape supporter block.
2) Hold the tape-supporter block of the drum ② and insert the drum flexible board into the mechanical chassis block assy.
3) Insert the two reference holes A and B of the drum into the reference pins A and B of the drum base assy.
4) Hook the flexible board Ⓒ portion on the notch.
5) Install the three drum fixing screws (M1.4 × 1.3) ① in the order starting from Ⓓ, then Ⓔ, and finally Ⓕ. Then tighten the screws.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
   Return Ⓔ 120°, then apply the screw locking paint (Neji lock).
6) Clean the drum by referring to section2-1.
7) Perform the tape path adjustment. (Refer to “4-4. Tape Path Adjustment”.)

Key Points in Re-assembling

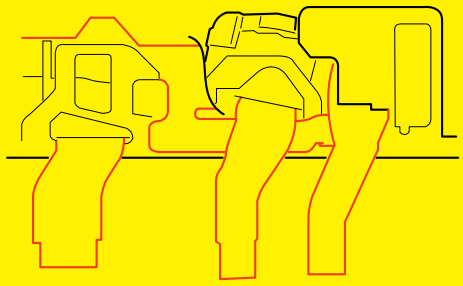


Drum (rear view)



Drum Flexible Board Processing

Key Points in Re-assembling



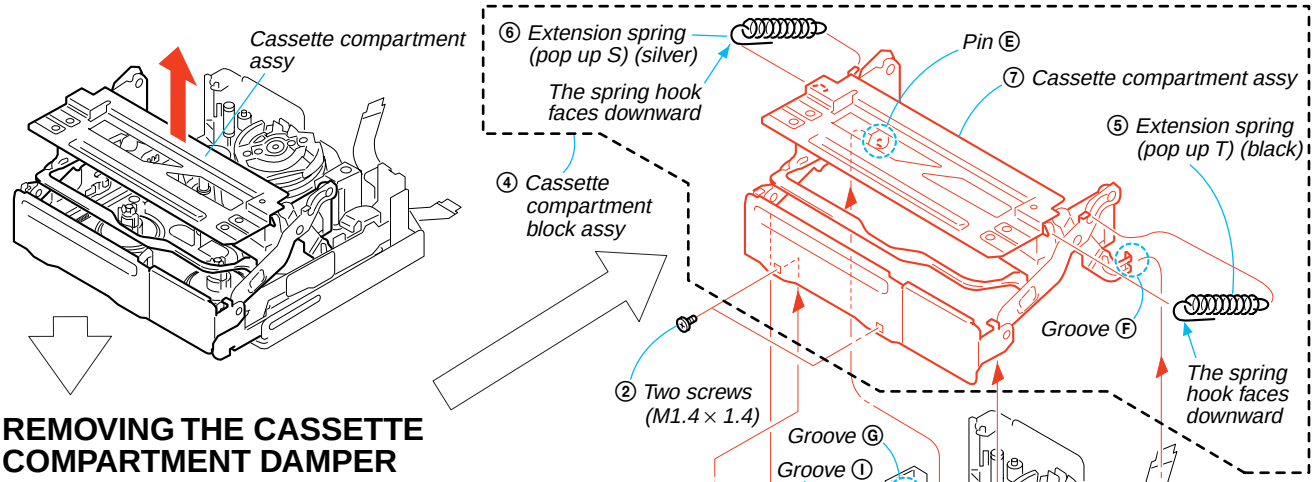
3-3. Cassette Compartment Assy

1. Removal procedure

1) Set the [EJ] mode.
2) Press the cassette compartment down halfway. Pull the cassette compartment damper ① in the direction of the arrow Ⓐ. Then rotate it in the Ⓑ direction, and remove it in the direction of Ⓒ.
3) Remove the two screws (special head screw M1.4 × 1.4) ②.
4) Remove the LS chassis block assy ③ in the direction of the arrow Ⓓ.
5) Remove the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ from the LS chassis groove Ⓖ and pin Ⓗ. Then remove the cassette compartment block assy ④.
6) Remove the tension spring (POP UP T) (black) ⑤.
7) Remove the tension spring (POP UP S) (silver) ⑥.Then remove the cassette compartment assy ⑦.

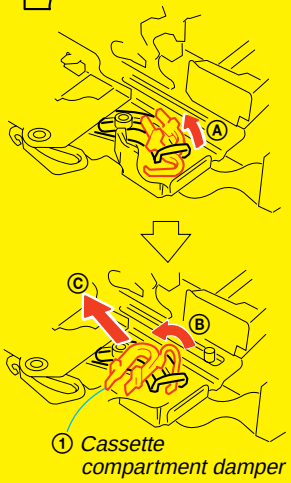
2. Attachment procedure

1) Set the [ULE] mode.
2) Install the tension spring (cassette compartment S) (POP UP S) (silver) ⑥ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
3) Install the tension spring (cassette compartment T) (POP UP T) (black) ⑤ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
4) Install the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ into the LS chassis groove Ⓖ and pin Ⓗ.
5) In the status that the LS block assy ③ is kept open, insert it into the grooves Ⓘ and Ⓙ of the LS chassis block assy.
6) Close the LS chassis block assy ③ in the direction opposite to the arrow Ⓓ, and install it with the two screws (special head screw M1.4 × 1.4) ②.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
7) The cassette compartment down halfway. Pass the Ⓚ portion of the cassette compartment damper ① through the groove at the tip of the cassette compartment. Then pull the Ⓛ portion and fix it using tweezers or something.

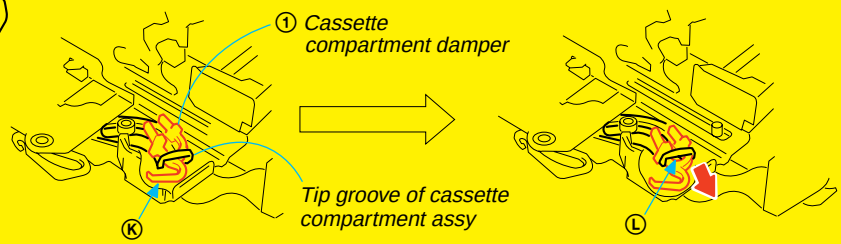


REMOVING THE CASSETTE COMPARTMENT DAMPER

Points to be noted



Key Points in Re-assembling



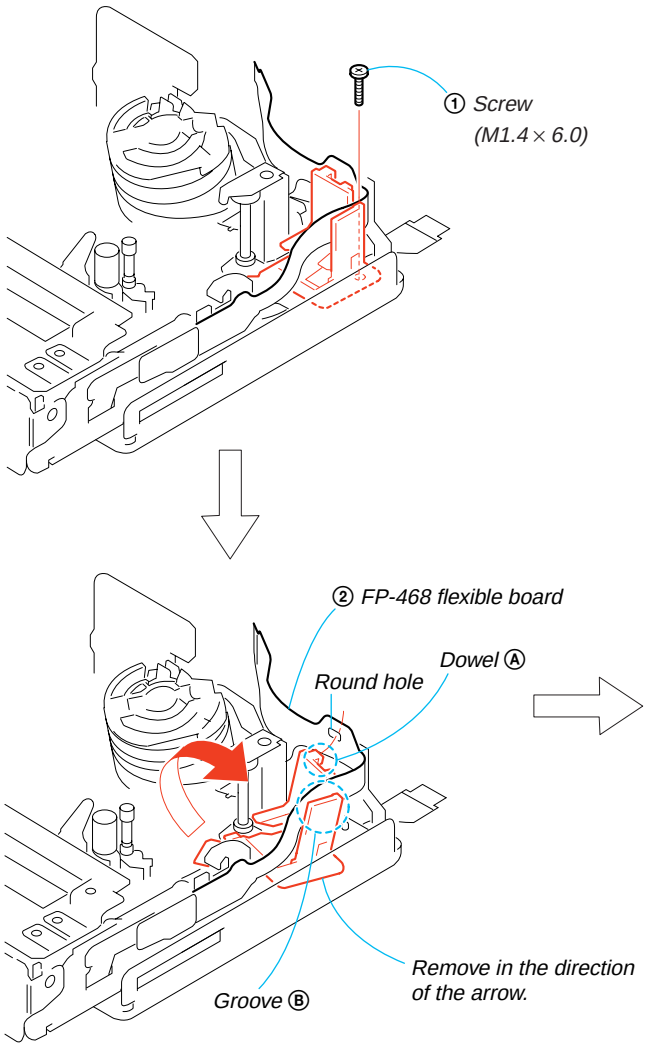
3-4. TG7 Support

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 6.0) ①.
2) Remove the FP-468 flexible board ② from the dowel Ⓐ of the TG7 support.
3) Remove the FP-468 flexible board ② from the groove Ⓑ of the TG7 support.
4) Remove the TG7 support ③ in the direction of the arrow.

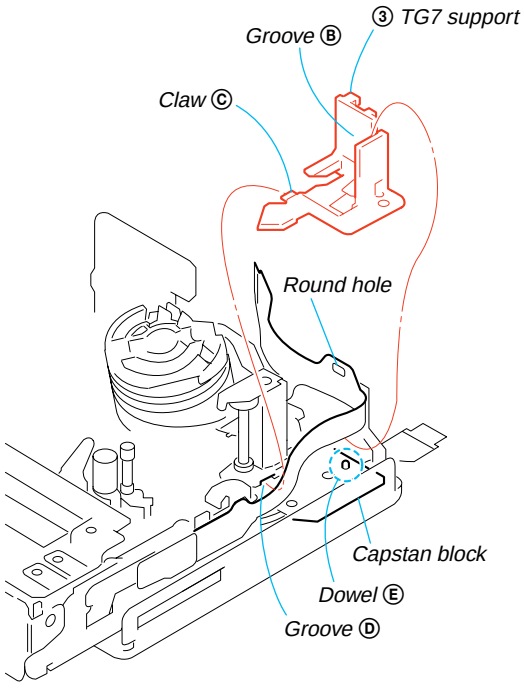
2. Attachment procedure

1) Install the FP-468 flexible board ② into the groove Ⓑ of TG7 support ③.
2) Insert the claw Ⓒ of the TG7 support ③ into the groove Ⓓ of the capstan block, and fix it while aligning with the dowel Ⓔ.
3) Align the round hole of the FP-468 flexible board ② with the dowel Ⓐ of the TG7 support ③.
4) Install the screw (special head screw M1.4 × 6.0) ①.
Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)



Points to be noted

• Be careful not to damage the FP-468 flexible board.



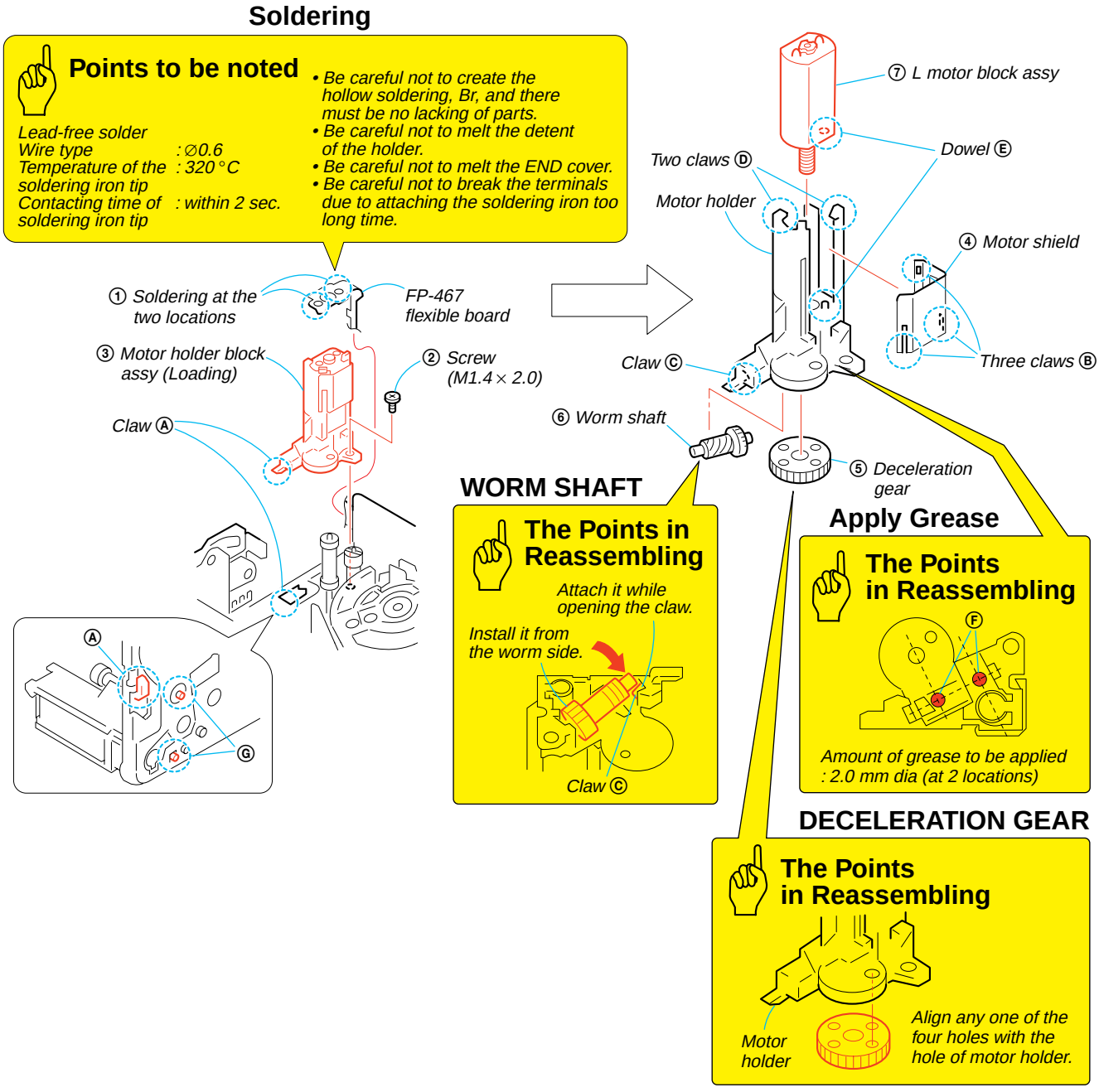
3-5. Motor Holder Block Assy and L Motor Block Assy

1. Removal procedure

1) Remove soldering at the two locations ①, and remove the FP-467 flexible board from the motor holder block assy (loading) ③.
2) Remove the screw (special head screw M1.4 × 2.0) ②.
3) Remove the motor holder block assy (loading) ③ by pulling it off from the claw Ⓐ.
4) Release the three claws Ⓑ and remove the motor shield ④.
5) Remove the deceleration gear ⑤.
6) Release the claw Ⓒ and remove the worm shaft ⑥.
7) Release the two claws Ⓓ and remove the L motor block assy ⑦ from the motor holder.

2. Attachment procedure

1) Confirm the direction of the L motor block assy ⑦. Align the dowels Ⓔ then install into the motor holder. (Insert the motor worm so that the motor worm does not touch the motor holder, and fix it with two claws Ⓓ.
2) Engage the three claws Ⓑ and install the motor shield.
3) Apply 2.0 g of grease (at 2 locations) to the bottom Ⓕ of the motor holder.
4) Install the worm shaft ⑥ from the worm side and set the claw.
5) Install the reduction gear ⑤.
6) Engage the claw Ⓐ and align the two dowels Ⓖ. Then install the motor holder block assy (loading) ③ in the mechanical chassis block. Install the screw (special head screw M1.4 × 2.0) ②.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
7) Make soldering at the two locations ①. Install the motor holder block assy (loading) ③ into the FP-467 flexible board ④.



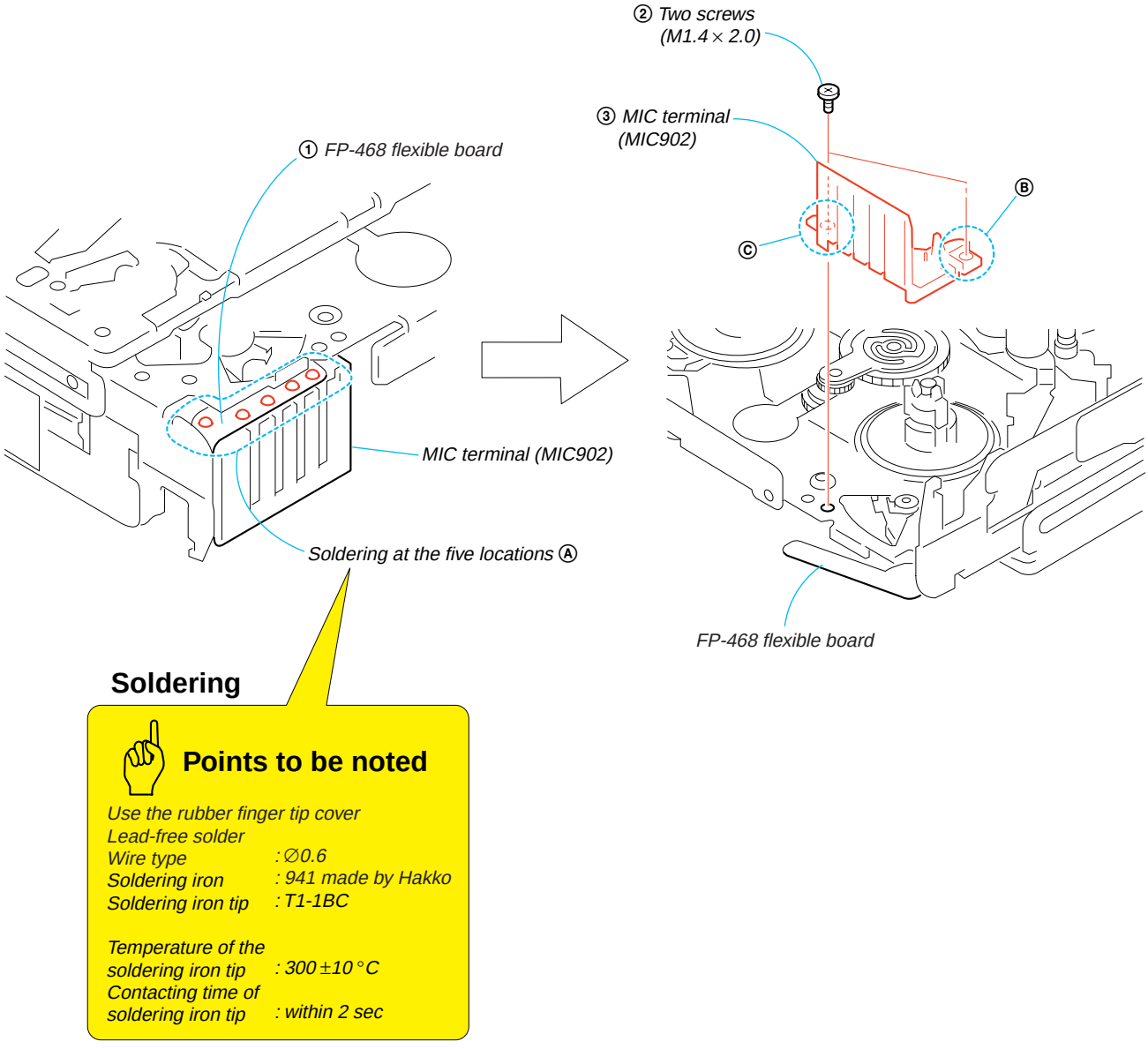
3-6. MIC Terminal (MIC902)

1. Removal procedure

1) Remove soldering at the five locations Ⓐ, and remove the FP-467 flexible board ① from the MIC terminal (MIC902) ③.
2) Remove the screw (special head screw M1.4 × 2.0) ② and remove the MIC terminal (MIC902) ③.

2. Attachment procedure

1) While pressing the top of the MIC terminal (MIC902) ③, tighten the two screws (special head screw M1.4 × 2.0) ② in the order of Ⓑ then Ⓒ.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
2) Make soldering at the five locations Ⓐ, and connect the FP-468 flexible board ① into the MIC terminal (MIC902) .



Soldering

Points to be noted

Use the rubber finger tip cover
Lead-free solder

Wire type	*: ∅0.6*
Soldering iron	*: 941 made by Hakko*
Soldering iron tip	*: T1-1BC*
Temperature of the soldering iron tip	*: 300 ±10 °C*
Contacting time of soldering iron tip	*: within 2 sec*

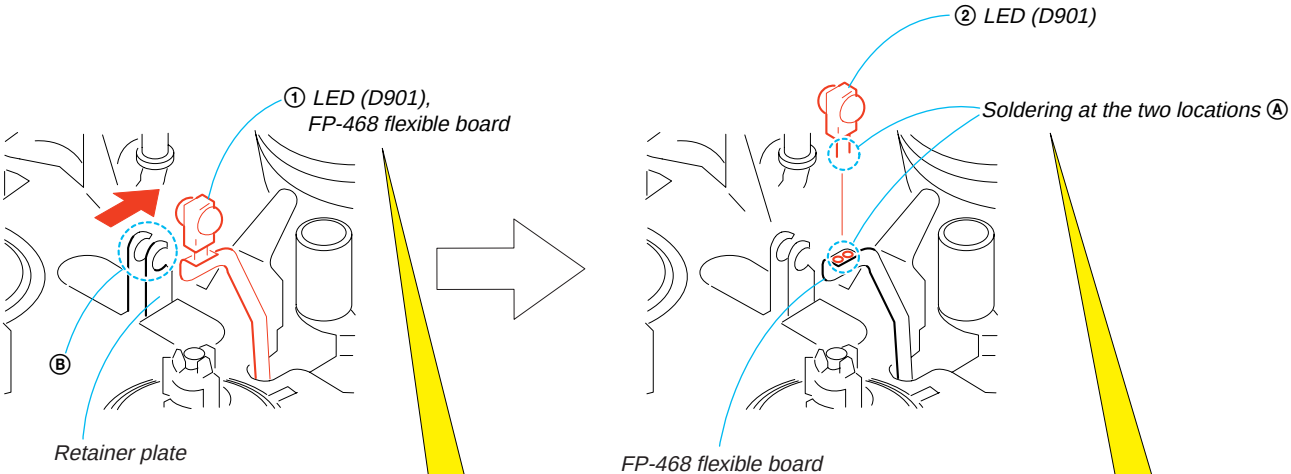
3-7. LED (D901)

1. Removal procedure

1) Remove LED (D901) and the FP-468 flexible board ① from the retainer plate.
2) Remove soldering at the two locations Ⓐ and remove LED (D901) ②.

2. Attachment procedure

1) Install the LED (D901) ② to the FP-468 flexible board by making soldering at the two locations Ⓐ.
2) Fold the FP-468 flexible board ① beneath the LED (D901) with finger tip so that it is inserted into the Ⓑ portion of the retainer plate.



LED (D901), FP-468 FLEXIBLE BOARD

Points to be noted

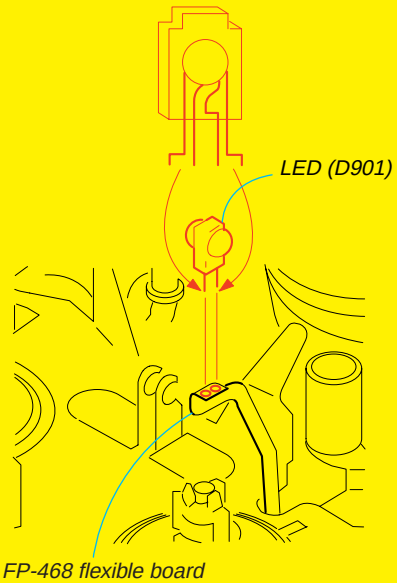
- *There must be no solder crack.*
- *There must be no scars and no stains.*
- *The flexible board must have no breakdown.*
- *The retainer plate and LED block must have no deformation.*

Soldering

Points to be noted

Rubber finger tip protection cover must be used.
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Soldering iron tip: T1-1BC
Temperature of the soldering iron tip: 300 ±10 °C
Contacting time of soldering iron tip: within 2 sec.

Direction of the terminal is specified.



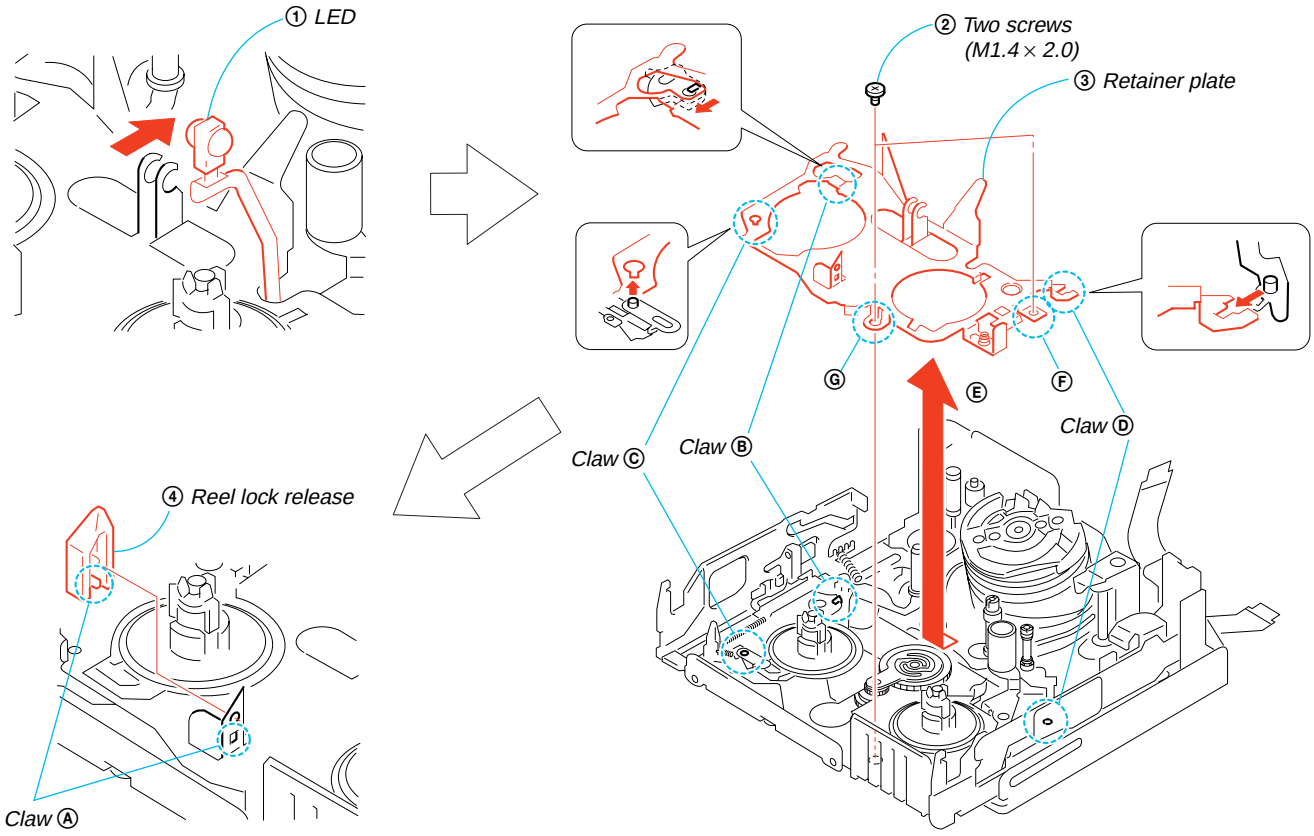
3-8. Retainer Plate

1. Removal procedure

1) Remove LED ① from the retainer plate.
2) Remove the two screws (special head screw M1.4 × 2.0) ②.
3) Release the three claws Ⓑ, Ⓒ and Ⓓ, and remove the retainer plate ③ in the direction of the arrow mark Ⓔ.
4) Release the claw Ⓐ and remove the reel lock release ④.

2. Attachment procedure

1) Install the reel lock release ④.
2) Place the retainer plate ③ on top of the LS chassis block assy and engage the three claws in the order starting from Ⓓ, Ⓒ and Ⓑ.
3) Install the two screws (special head screw M1.4 × 2.0) ② in the order starting from Ⓕ then Ⓖ.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
4) Install LED ① to the retainer plate.



REEL LOCK RELEASE

Key Points in Re-assembling

- *The reel lock release should not be re-used.*
- *The retainer plate must not have any deformation.*
- *The reel lock release should be fully installed. (Should not be left in the half-installed state.)*

RETAINER PLATE

Key Points in Re-assembling

- *All claws must be fully engaged. (Caution : No claws should be left disengaged.)*
- *The flexible board should not be pinched by anything.*
- *The retainer plate must not touch with the MIC terminal.*

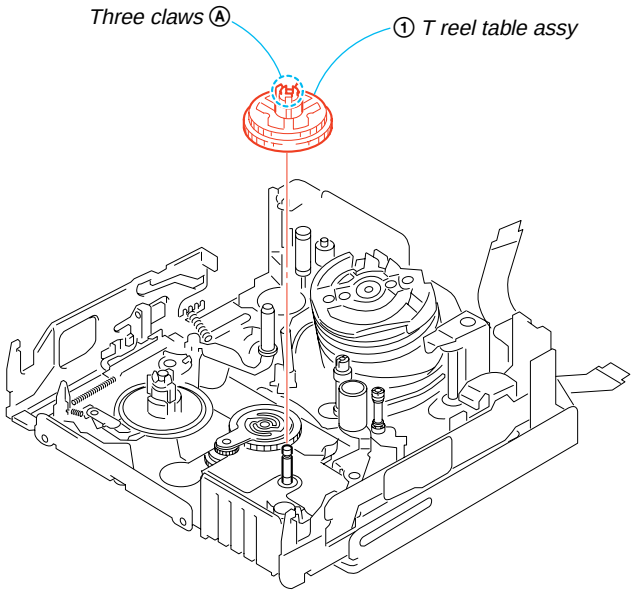
3-9. T Reel Table Assy

1. Removal procedure

1) Remove the T reel table assy ①, averting three claws Ⓐ.

2. Attachment procedure

1) Confirm that the supplied part is really the T reel table assy ①. Insert the T reel table assy ① into the T reel shaft. Install the T reel table assy ① and lock it at the position where you can hear the snapping sound. You can find the locking position by rotating the T reel table assy ①.



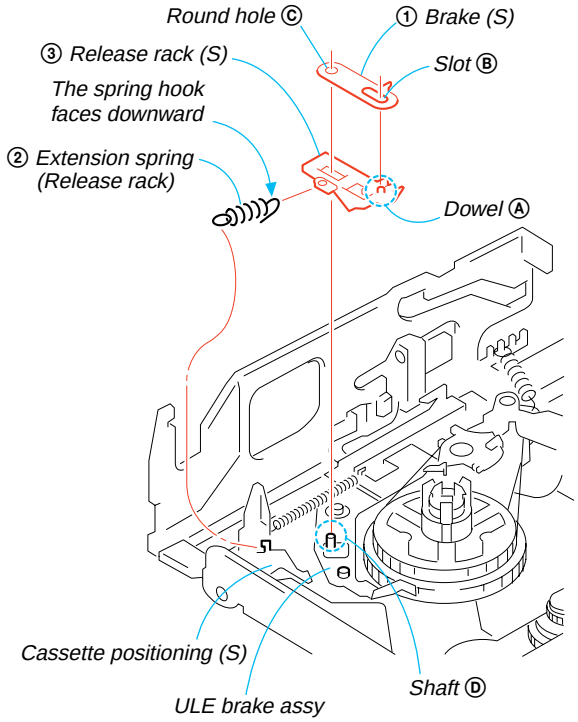
3-10. Brake (S) and Release Rack (S)

1. Removal procedure

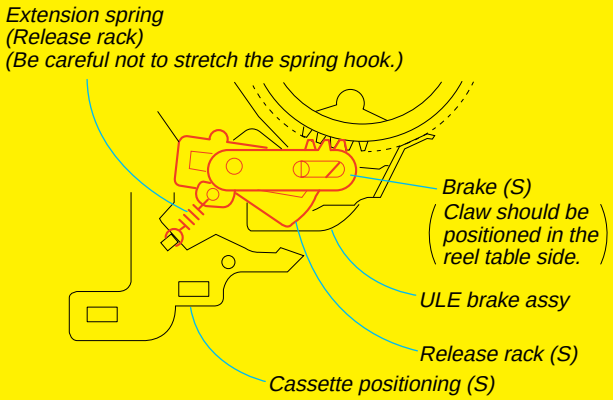
1) Remove the brake (S) ①.
2) Remove the tension spring (release rack (S)) ②.
3) Remove the release rack (S) ③.

2. Attachment procedure

1) Remove the release rack (S) ③ by holding it with a ultra precision tweezers. Install the tension spring (release rack) ② while being careful of the installation direction of the tension spring.
2) Hook the tension spring (release rack) ② on the hook of the cassette positioning (S), and then install it in the ULE brake assy.
3) Insert the slot Ⓑ in the dowel Ⓐ of the release rack (S) ③. Insert the round hole Ⓒ into the pivot shaft Ⓓ and install the brake (S) ①.
(Installation direction: Claw should be positioned in the reel table side.)



Key Points in Re-assembling



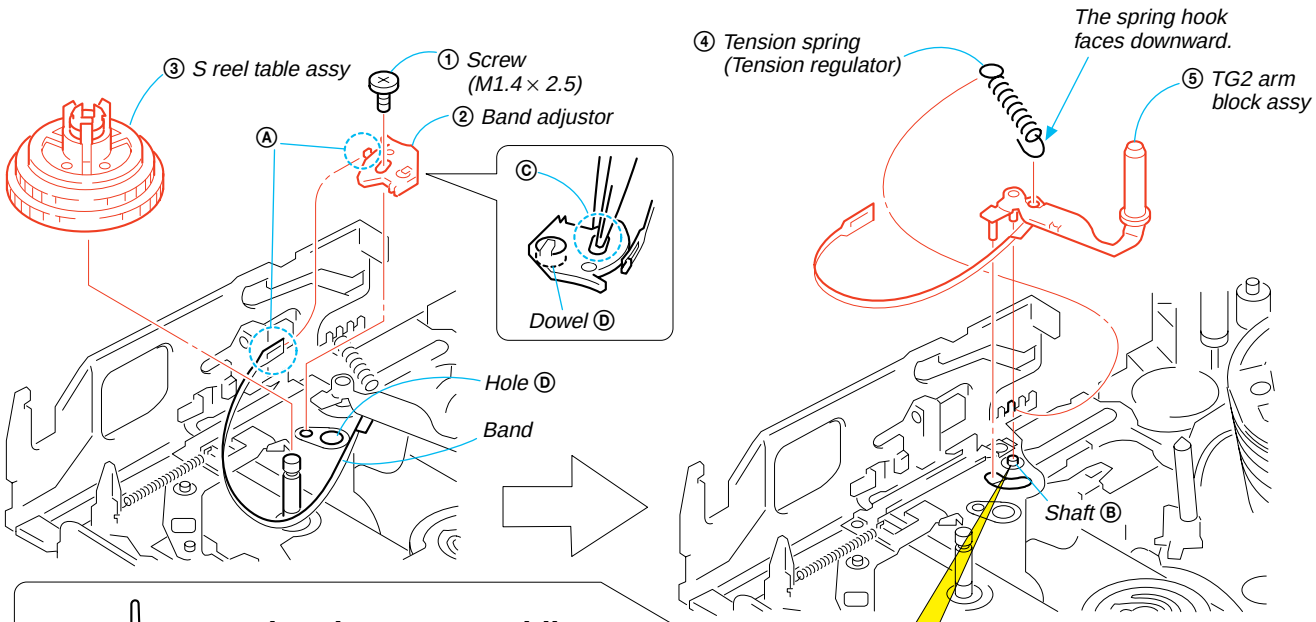
3-11. Band Adjuster, S Reel Table Assy and TG2 Arm Block Assy

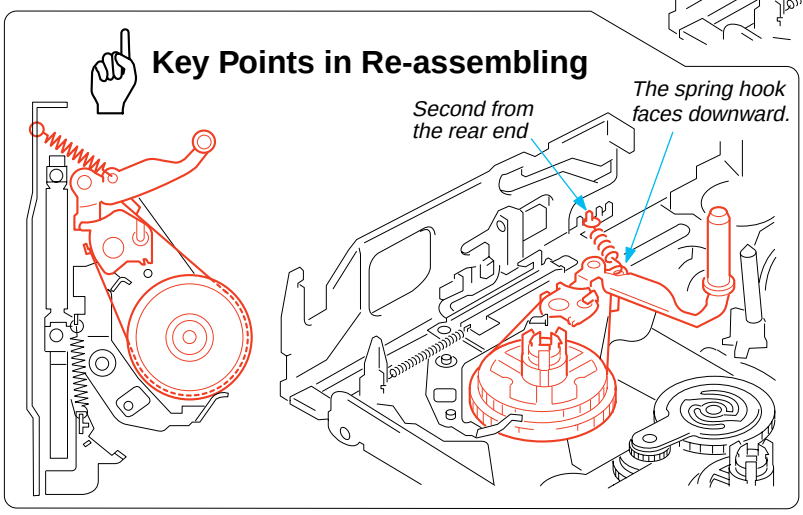
1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.5) ①.
2) Remove the band Ⓐ of the TG2 arm block and remove the band adjuster ②.
3) Remove the S reel table assy ③.
4) Remove the tension spring (tension regulator spring) ④.
5) Remove the TG2 arm block assy ⑤.

2. Attachment procedure

1) Install the S reel table assy ③.
2) Apply grease in the TG2 arm pivot shaft Ⓑ.
   Amount of grease: a ball of 1.0 mm diameter of grease
   Re-application of grease to the point which is greased already before is not necessary.
3) Hold the TG2 arm block assy ⑤ with tweezers and insert it in the TG2 arm pivot shaft Ⓑ.
4) Hook the tension spring (tension regulator spring) ④ on the TG2 arm block ⑤ with tweezers so that the hook faces downward.
5) Hook the tension spring (tension regulator spring) ④ on the LS chassis block assy (the second hook from the rear end).
6) Hook the Ⓐ portion of the band on the claw of the band adjuster ②.
7) Hold the band adjuster with tweezers as shown in Ⓒ. Insert the band into groove of the S reel table assy while rotating it, and insert the adjuster's dowel into the dowel hole Ⓓ of the LS chassis block assy.
8) Install the band adjuster ② with the screw (special head screw M1.4 × 2.5) ①.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
9) Perform the TG2 FWD Position Adjustment referring to section 4-1.
10) Perform the FWD Back-tension Adjustment referring to section 4-4.
11) Perform the Reel Torque Check referring to section 4-2.

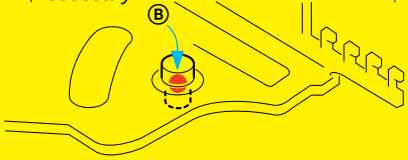




Apply Grease

Points to be noted

During installation, apply grease in the TG2 arm pivot shaft hole.
Amount of grease:
a ball of grease of 1.0 mm diameter
Re-application of grease to the point which is greased already before is not necessary.



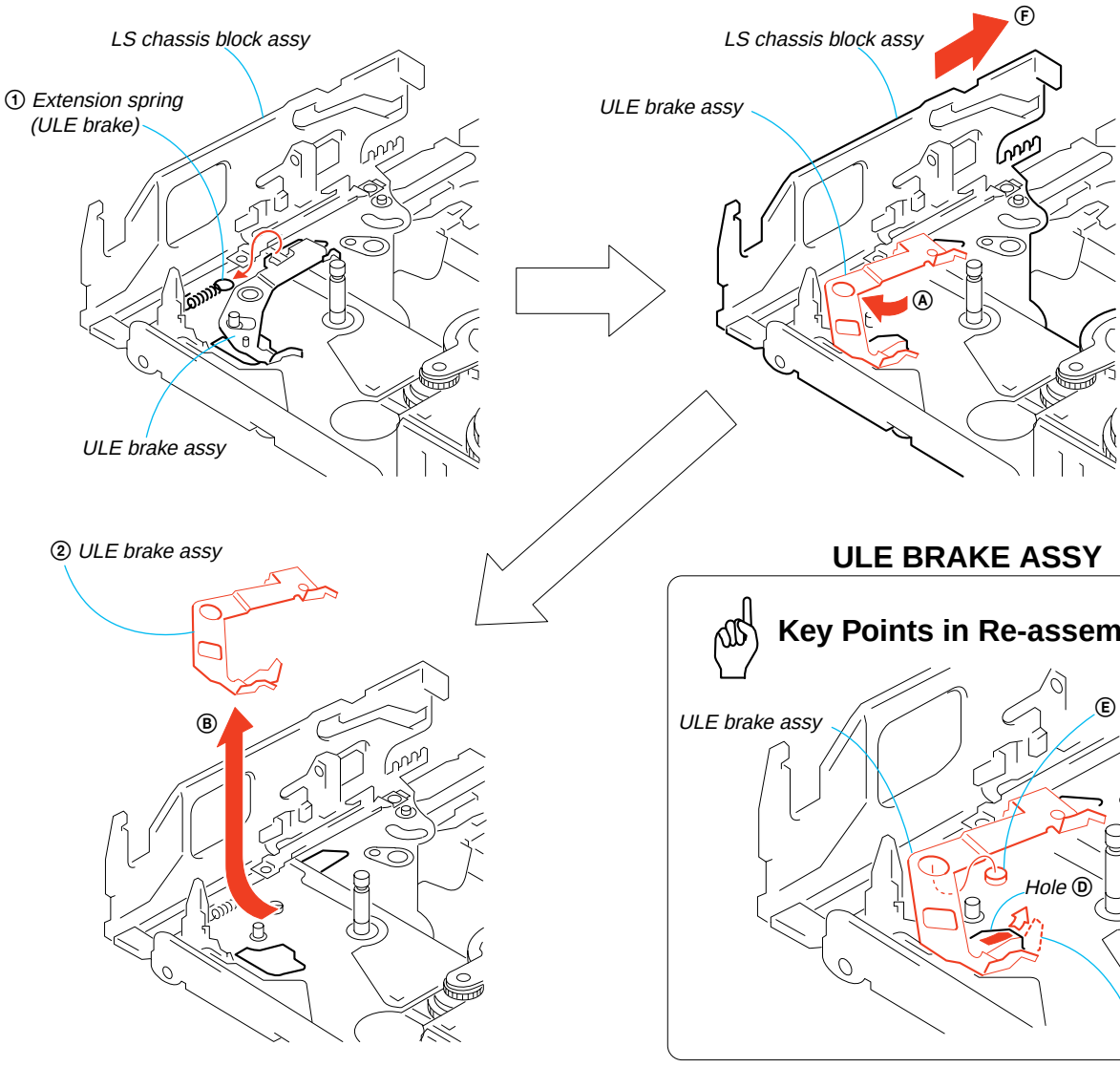
3-12. ULE Brake Assy

1. Removal procedure

1) Remove the tension spring (ULE brake) ① from the ULE brake assy ②.
2) Slide the LS chassis block assy slightly in the direction of the arrow Ⓕ.
3) Slant the ULE brake assy ② in the direction of the arrow Ⓐ and remove it by sliding it in the direction of Ⓑ.

2. Attachment procedure

1) Confirm the front side and the rear side of the ULE brake assy ②. Hold it correctly with tweezers. Insert the portion Ⓒ into the hole Ⓓ of the LS chassis block assy and install the center hole in the Ⓔ of the chassis.
2) Install the tension spring (ULE brake assy) ①.



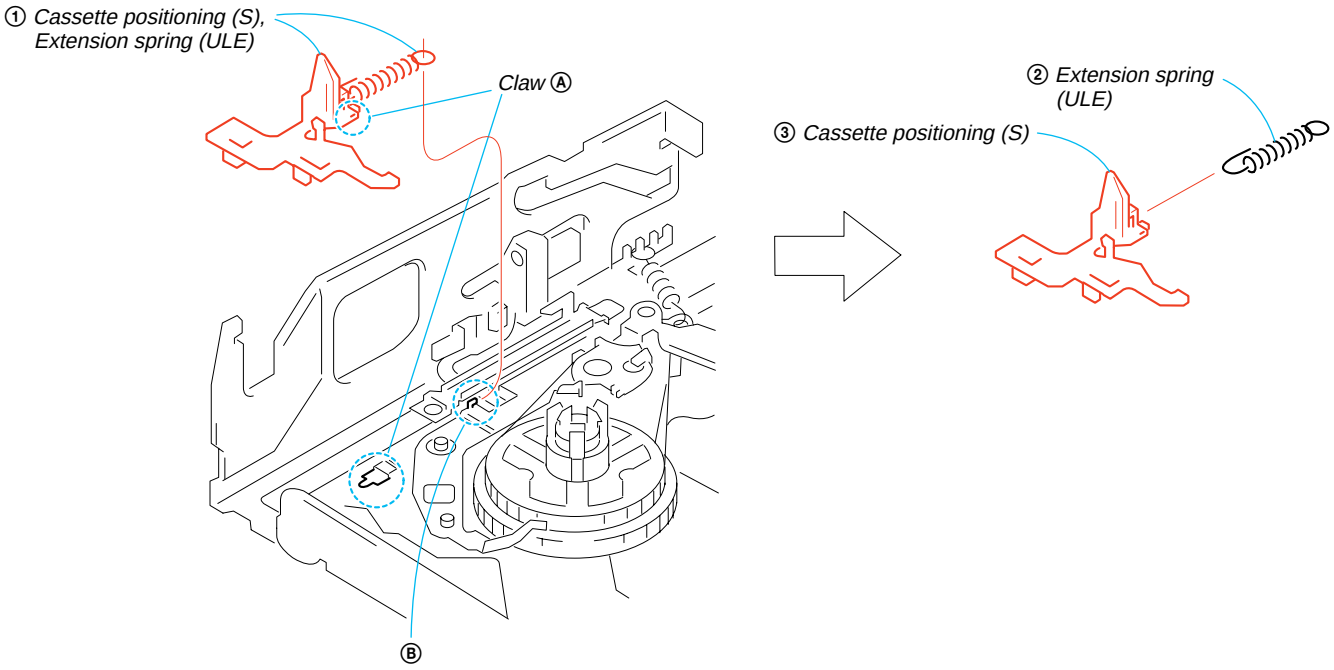
3-13. Cassette Positioning (S)

1. Removal procedure

1) Remove the tention spring (ULE brake) ② from the hook Ⓑ of ULE brake assy.
2) Slide the cassette positioning (S), then remove the cassette positioning (S) and tension spring (ULE brake) ① all together at the same time.
3) Remove the tension spring (ULE brake) ② from the cassette positioning (S) ③.

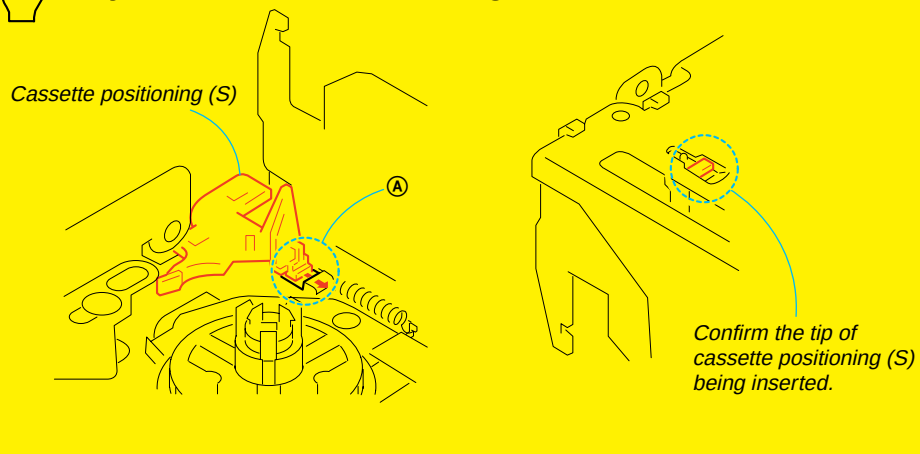
2. Attachment procedure

1) Hook the tension spring (ULE brake) ② on the cassette positioning (S) ③ with tweezers.
2) Hold the cassette positioning (S) ③ with tweezers and insert the top tip of the claw into the LS chassis block assy Ⓐ. Lock it by sliding it in.
3) Install the other end of the tension spring (ULE brake) ② on the hook Ⓑ.



CASSETTE POSITIONING (S)

Key Points in Re-assembling



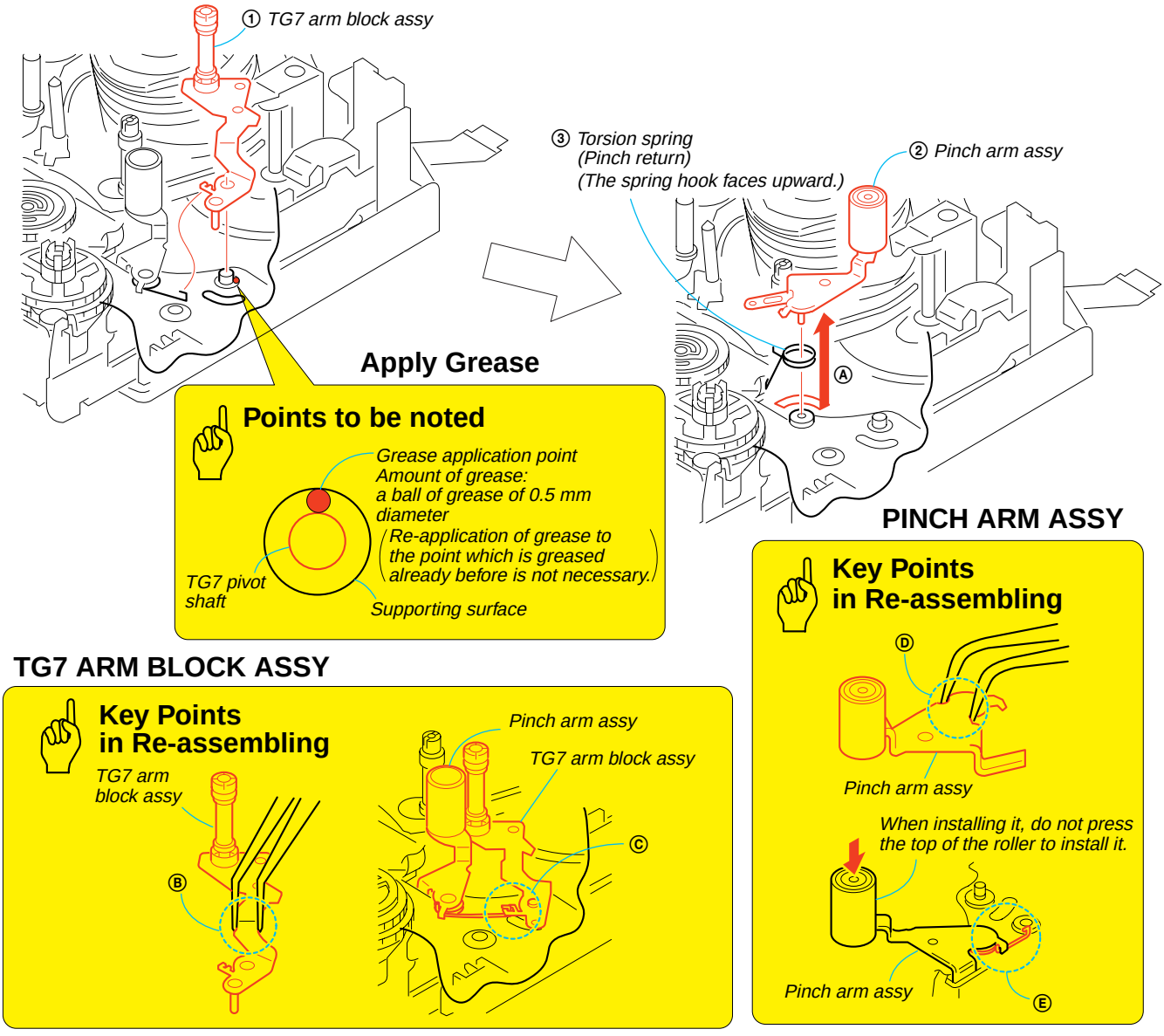
3-14. TG7 Arm Block Assy and Pinch Arm Assy

1. Removal procedure

1) Remove the TG7 arm block assy ①.
2) Rotate the pinch arm assy ② in the direction of the arrow Ⓐ and remove it.
3) Remove the torsion spring (pinch return) ③.

2. Attachment procedure

1) Hold the torsion spring (pinch return) ③ with tweezers. Confirm that the hook faces upward and install it in the bearing.
2) Hold the pinch arm assy ② as shown in Ⓓ and install it in the pinch arm bearing.
3) Hold the torsion coil spring (pinch return) ③ with tweezers and install it as shown in Ⓔ.
4) Apply grease on the supporting surface of the TG7 pivot shaft.
   Amount of grease: a ball of grease of 0.5 mm diamte
   Re-application of grease to the point which is greased already before is not necessary.
5) Hold the TG7 arm block assy ① as shown in Ⓑ and insert it in the pivot shaft of the TG7 arm.
6) Hold the torsion spring (pinch return) ③ with tweezers and install it on the hook of the TG7 arm block assy ① as shown in Ⓒ.
7) Confirm that the torsion spring (pinch return) ③ does not override on the pinch supporting shaft.



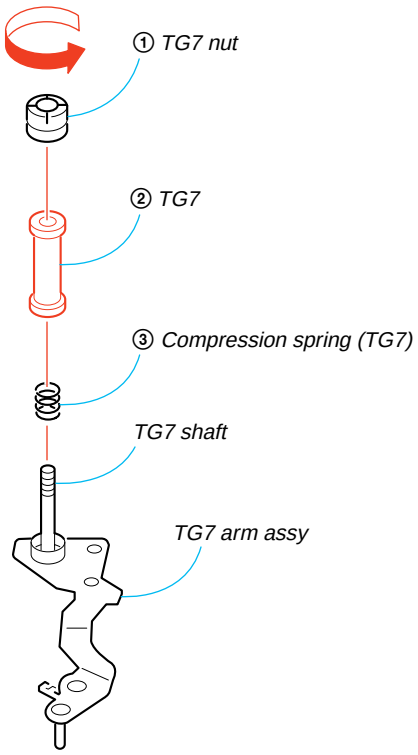
3-15. TG7

1. Removal procedure

1) Remove the TG7 nut ① by turning it in the direction of the arrow.
2) Remove the TG7 ② and compression coil spring ③ from the TG7 arm block assy.

2. Attachment procedure

1) Install the compression coil spring ③ and TG7 ② in the TG7 shaft of the TG7 arm block assy.
2) Install the TG7 nut ① by turning it in the opposite direction of the arrow.



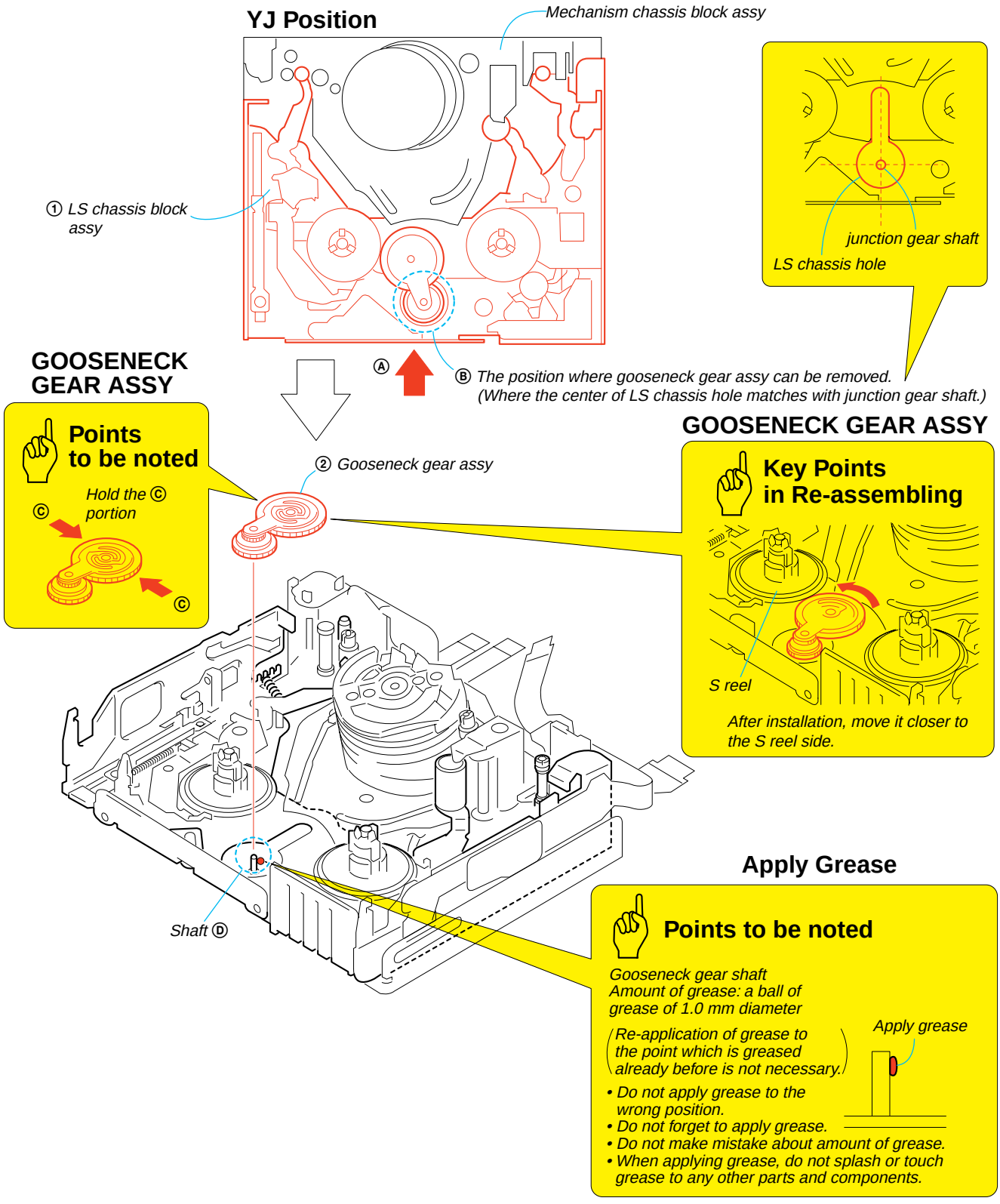
3-16. Gooseneck Gear Assy

1. Removal procedure

1) Move the LS chassis block assy ① in the direction of the arrow Ⓐ to make it in YJ position.
   YJ position: The position Ⓑ where gooseneck gear assy can be removed. (where the center of LS chassis hole matches with junction gear shaft.)
2) Remove the gooseneck gear assy, holding it with Ⓒ.

2. Attachment procedure

1) Apply grease to the gooseneck gear shaft Ⓓ portion.
   Amount of grease: a ball of grease of 1.0 mm diameter
   Need no re-application to one which applied already.
2) Install the gooseneck gear assy, holding it with Ⓒ in the gooseneck gear shaft.
3) Move it closer to the S reel.



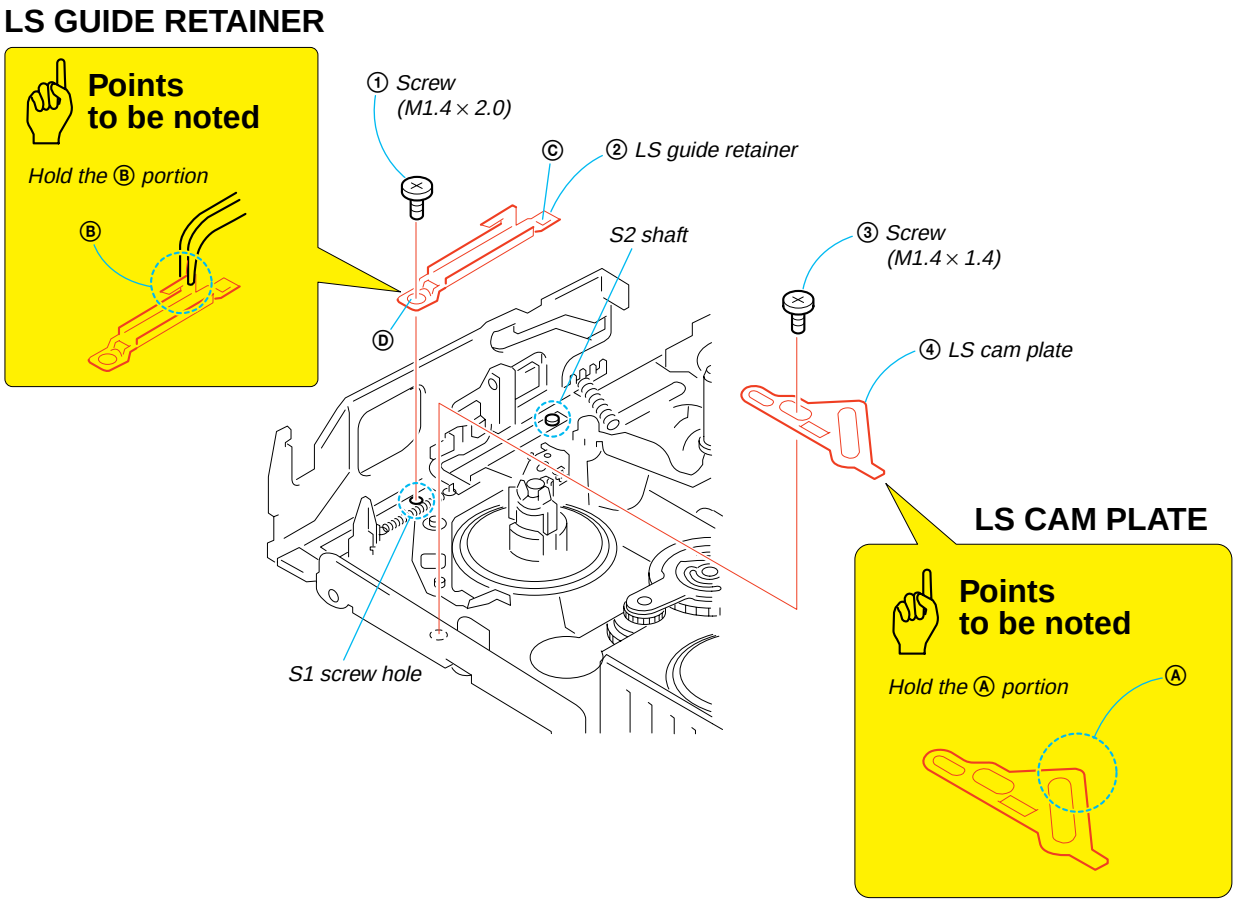
3-17. LS Guide Retainer and LS Cam Plate

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.0) ①. and remove the LS guide retainer ②.
2) Remove the screw (special head screw M1.4 × 1.4) ③ and remove the LS cam plate ④.

2. Attachment procedure

1) Hold the LS cam plate with Ⓐ and place it aligning the two dowels. Tighten the screw (special head screw M1.4 × 1.4) ③ in half way.
2) Adjust the LS cam plate by referring to section 4-5.
3) Hold the LS guide retainer ② with Ⓑ and hook its key hole Ⓒ on the S2 shaft, and align the hole Ⓓ to S1 screw hole.
4) Install the screw (special head screw M1.4 × 2.0) ① in the S1 screw hole.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)



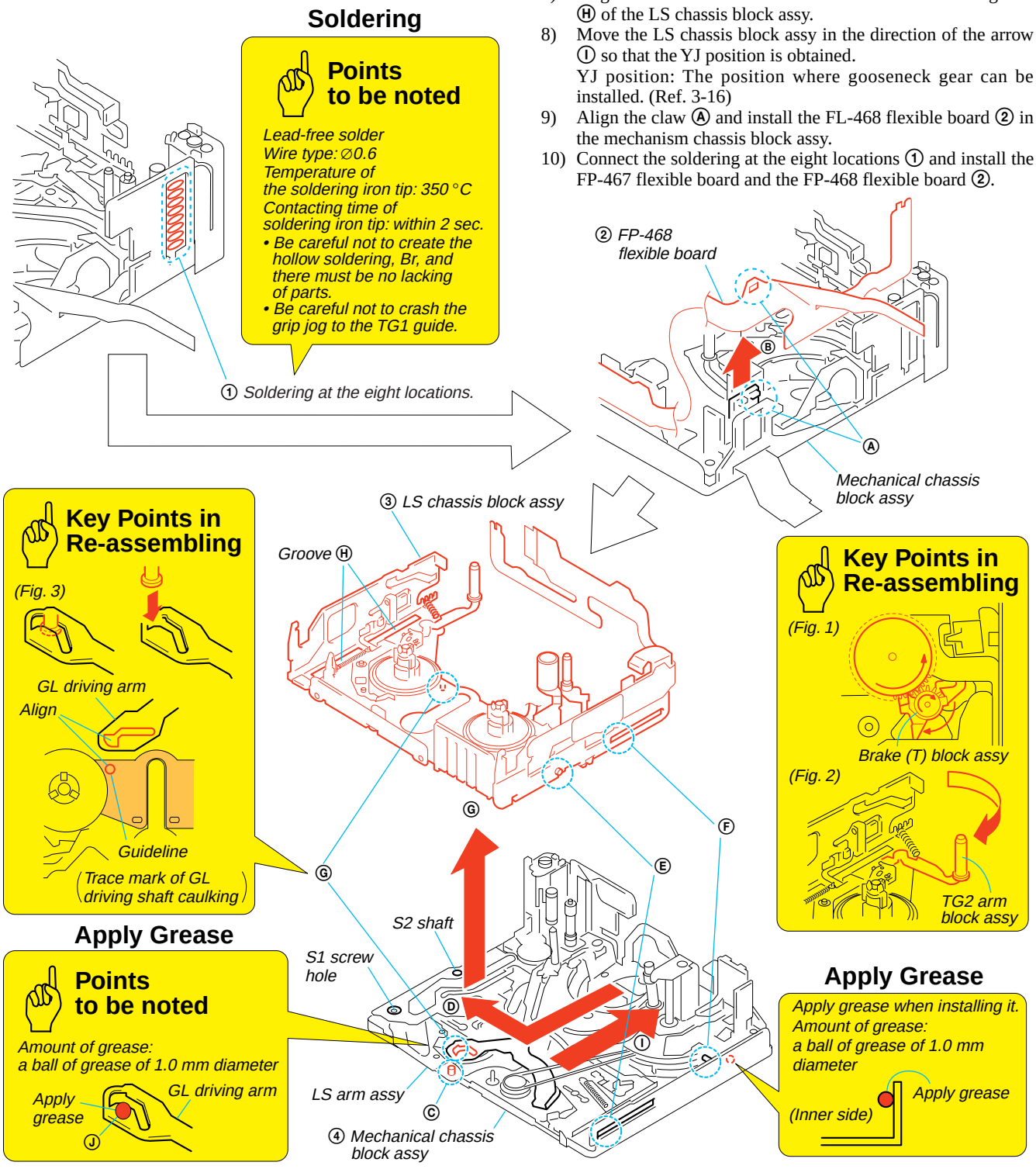
3-18. LS Chassis Block Assy and Mechanical Chassis Block Assy

1. Removal procedure

1) Remove soldering at the eight locations ①.
2) Release the claw Ⓐ and remove the FP-468 flexible board ② from the mechanical chassis block assy in the direction of the arrow Ⓑ.
3) Raise the front portion of the LS chassis block assy ③ so that the pin Ⓒ of the LS arm assy is removed. Move the LS chassis block assy ③ in the direction of the arrow Ⓓ and release the three pins of Ⓔ, Ⓕ and Ⓖ, and also groove.
4) Remove the LS chassis block ④ from the mechanical chassis block assy.

2. Attachment procedure

1) Apply grease to the GL drive arm Ⓙ portion and mechanism chassis block L.
   Amount of grease: a ball of grease of 1.0 mm diameter
2) Rotate the T reel table assy in the counter-clockwise direction and move the brake T block to the position shown in Fig. 1. (Fig. 1)
3) Move the TG2 arm block to the inner side. (Fig. 2)
4) Hold the cam groove of the GL driving arm with tweezers through LS chassis hole Ⓚ and pick it up.
5) Insert the GL drive shaft into the cam groove of the raised GL drive arm using the trace mark of caulking on the side of the S reel of the LS chassis block assy. (Fig. 3)
6) Align the pins Ⓔ, Ⓕ and Ⓖ with the grooves.
7) Align the left side S1 screw hole and S2 shaft with the goove Ⓗ of the LS chassis block assy.
8) Move the LS chassis block assy in the direction of the arrow Ⓘ so that the YJ position is obtained.
   YJ position: The position where gooseneck gear can be installed. (Ref. 3-16)
9) Align the claw Ⓐ and install the FL-468 flexible board ② in the mechanism chassis block assy.
10) Connect the soldering at the eight locations ① and install the FP-467 flexible board and the FP-468 flexible board ②.



3-19. Brake (T) Block Assy

1. Removal procedure

1) Hold the Ⓐ portion and remove the brake (T) block assy ①.

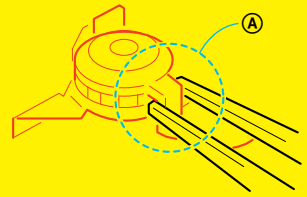
2. Attachment procedure

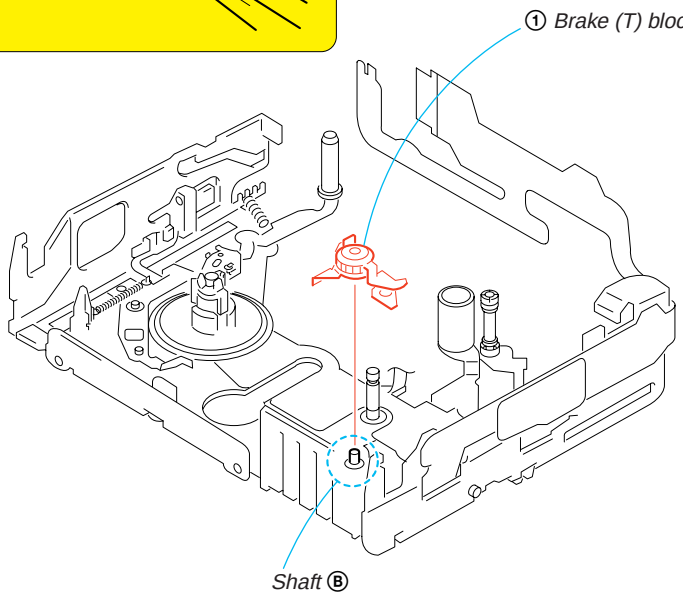
1) Hold the Ⓐ portion of the brake (T) block assy ①. While inserting the slot portion into the notch of the LS chassis block assy, install it into the shaft Ⓑ.
2) After completing installation of T reel table assy (Refer to 3-9.), rotate the brake (T) block assy ① in the clockwise direction by rotating T reel talbe assy in the counter-clockwise direction. (Fig. 1)

BRAKE (T) BLOCK ASSY

Points to be noted

Hold the Ⓐ portion

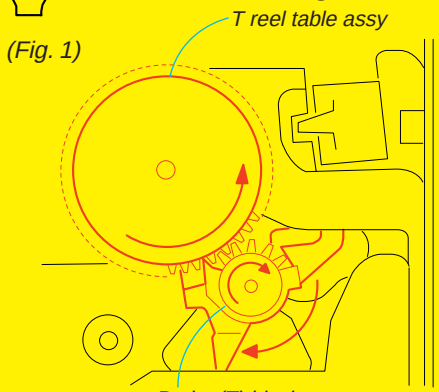




BRAKE (T) BLOCK ASSY

Key Points in Re-assembling

(Fig. 1)



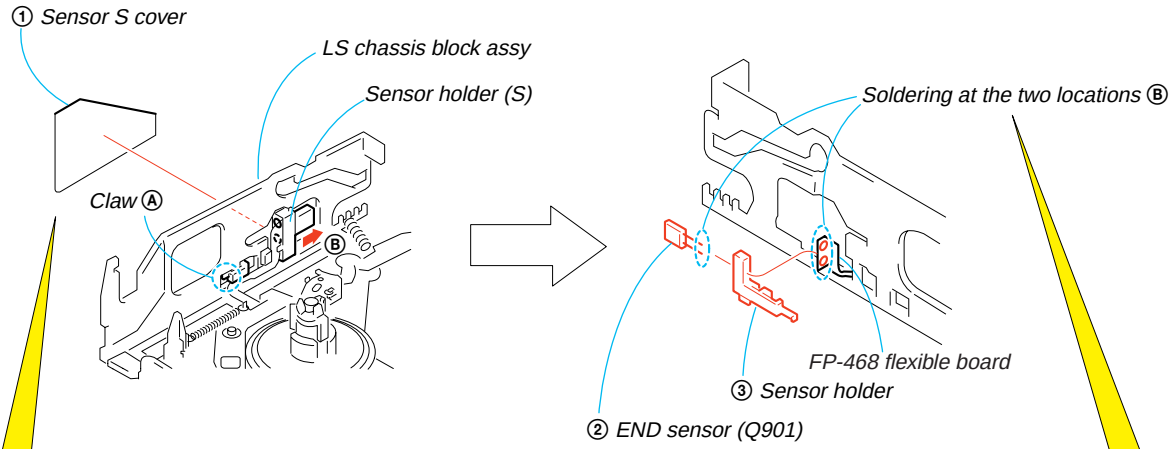
3-20. END Sensor (Q901)

1. Removal procedure

1) Peel off the sensor S cover ①.
2) Release the claw Ⓐ of the sensor holder (S) ③. Remove it from the LS chassis block assy by sliding it in the direction of the arrow Ⓑ.
3) Remove soldering at the two locations and remove the END sensor (Q901) ② and the sensor holder (S) ①.

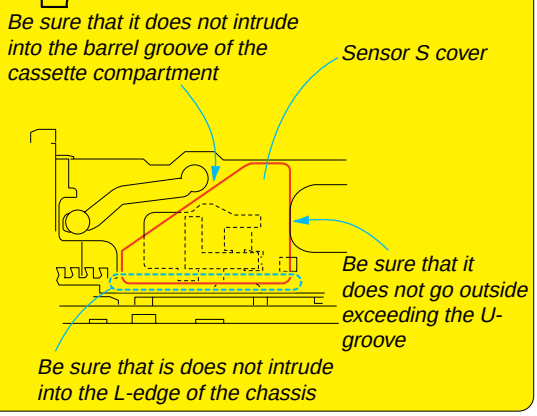
2. Attachment procedure

1) Connect the END sensor (Q901) ② and the sensor holder (S) ③ to the FP-468 flexible board by soldering them at the two locations Ⓑ.
2) Slide the END sensor (Q901) ② and the sensor holder (S) ③ in the direction of the arrow Ⓒ to install them in the LS chassis block assy.
3) Hook the flexible board on the end of the Ⓓ portion.
4) Attach the sensor S cover ①.



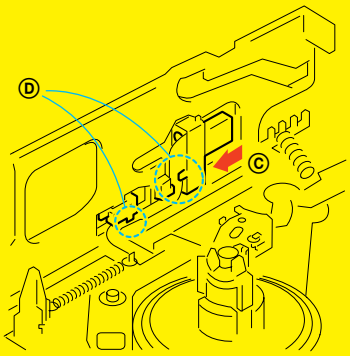
SENSOR S COVER

Key Points in Re-assembling



END SENSOR (Q901), SENSOR HOLDER (S)

Key Points in Re-assembling



Soldering

Points to be noted

Use the rubber finger tip
cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec

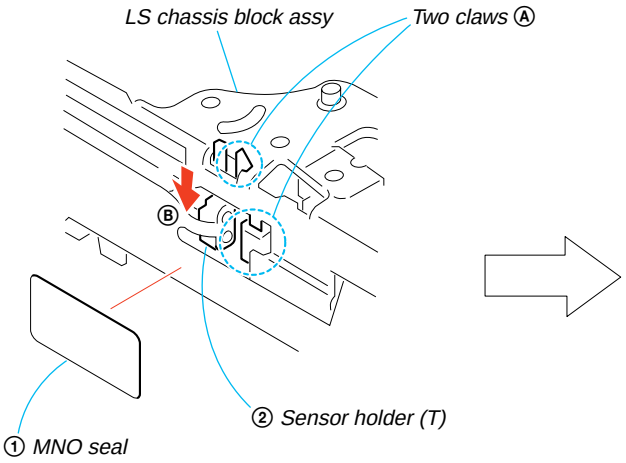
3-21. TOP Sensor (Q902)

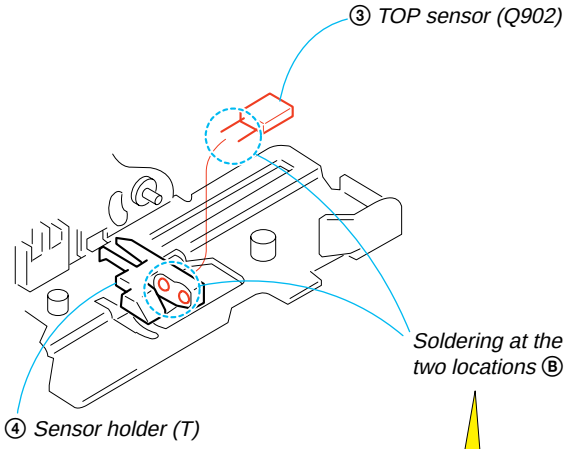
1. Removal procedure

1) Peel off the MNO seal ①.
2) Release the two claws of the sensor holder (T) ② at the two locations Ⓐ. Remove it from the LS chassis block assy by sliding it in the direction of the arrow Ⓑ.
3) Remove the soldering at the two locations Ⓑ and remove the TOP sensor (Q902) ③ and the sensor holder (T) ④.

2. Attachment procedure

1) Connect the TOP sensor (Q902) ③ and the sensor holder (T) ④ to the FP-468 flexible board by soldering them at the two locations Ⓑ.
2) Engage the two claws Ⓐ to install the TOP sensor (Q902) ③ and the sensor holder (T) ④ in the LS chassis block assy.
3) Attach the MNO seal ①.





Soldering

Points to be noted

Use the rubber finger tip cover
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec

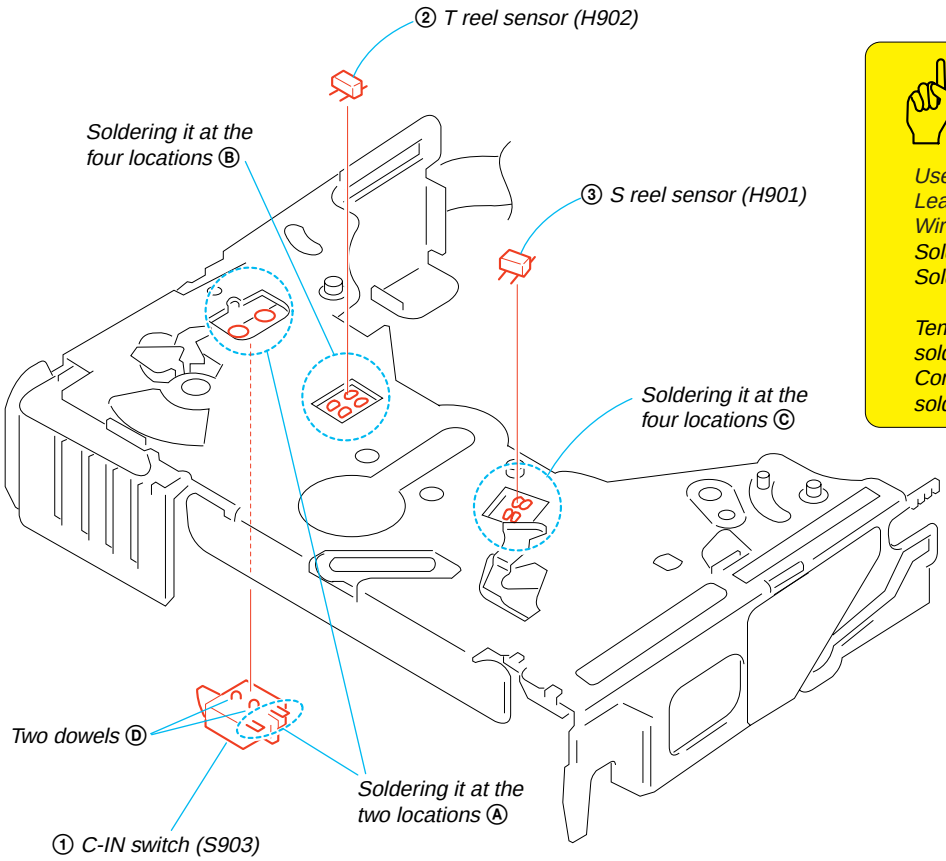
3-22. C-IN Switch (S903), S Reel Sensor (H901) and T Reel Sensor (H902)

1. Removal procedure

1) Remove soldering at the two locations Ⓐ and remove the C-IN switch (S903) ①.
2) Remove soldering at the four locations Ⓑ and remove the T reel sensor (H902) ②.
3) Remove soldering at the four locations Ⓑ and remove the S reel sensor (H901) ③.

2. Attachment procedure

1) Connect the S reel sensor (H901) ③ to the FP-468 flexible board by soldering it at the four locations Ⓒ.
2) Connect the T reel sensor (H902) ② to the FP-468 flexible board by soldering it at the four locations Ⓑ.
3) Align the two dowels Ⓓ and connect the C-IN switch (S903) ① to the FP-468 flexible board by soldering it at the two locations Ⓐ.



Soldering

Points to be noted

Use the rubber finger tip cover
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

Temperature of the soldering iron tip : 300 ± 10 °C
Contacting time of soldering iron tip : within 2 sec

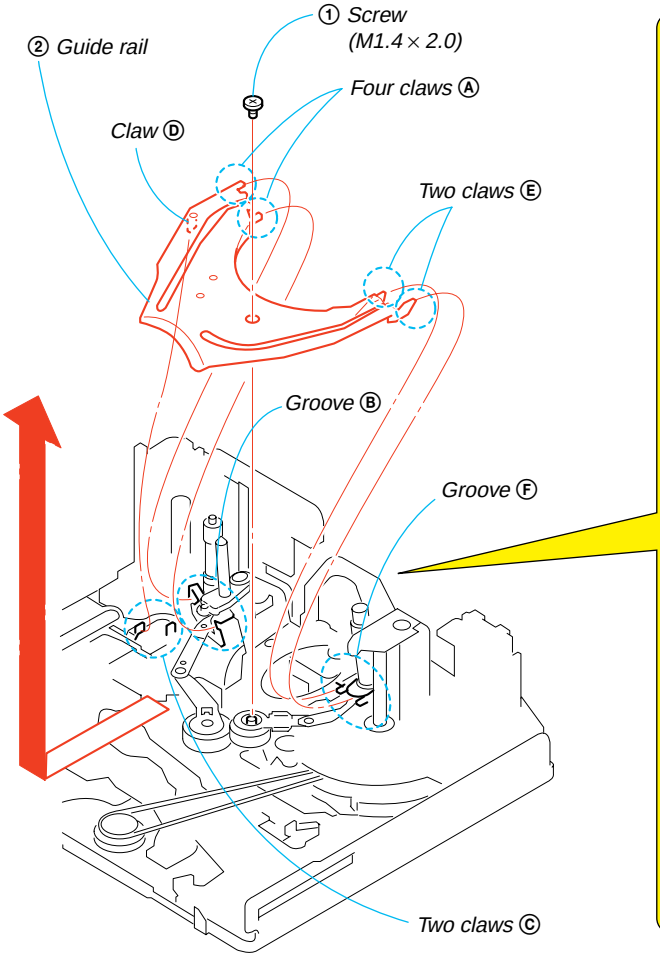
3-23. Guide Rail

1. Removal procedure

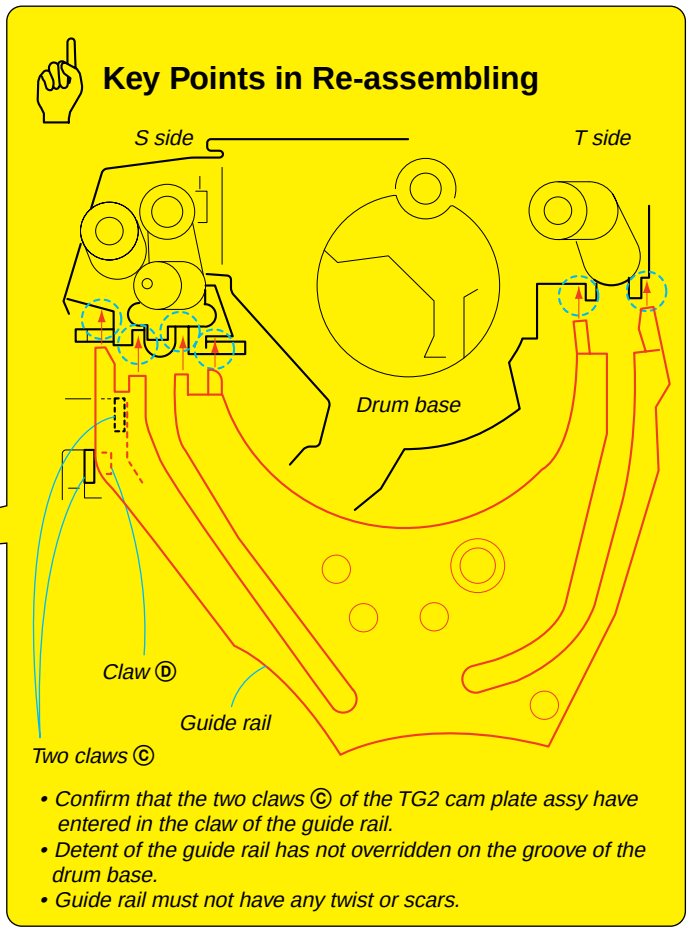
1) Remove the screw (special head screw M1.4 × 2.0) ①.
2) Remove the guide rail ② in the direction of the arrow.

2. Attachment procedure

1) Hold the center of the guide rail ②. While pressing the TG2 cam plate assy, insert the four claws Ⓐ of the guide rail in a slant angle from the top into the drum base's groove Ⓑ. (Insert the top tip of the rail at the same time.) Confirm at this time that the two claws of the TG cam plate assy have entered in the claw Ⓓ of the guide rail.
2) Insert the two claws Ⓔ of the T side guide rail into the groove Ⓕ of the drum base.
3) Tighten the screw (special head screw M1.4 × 2.0) ①.
Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)



GUIDE RAIL



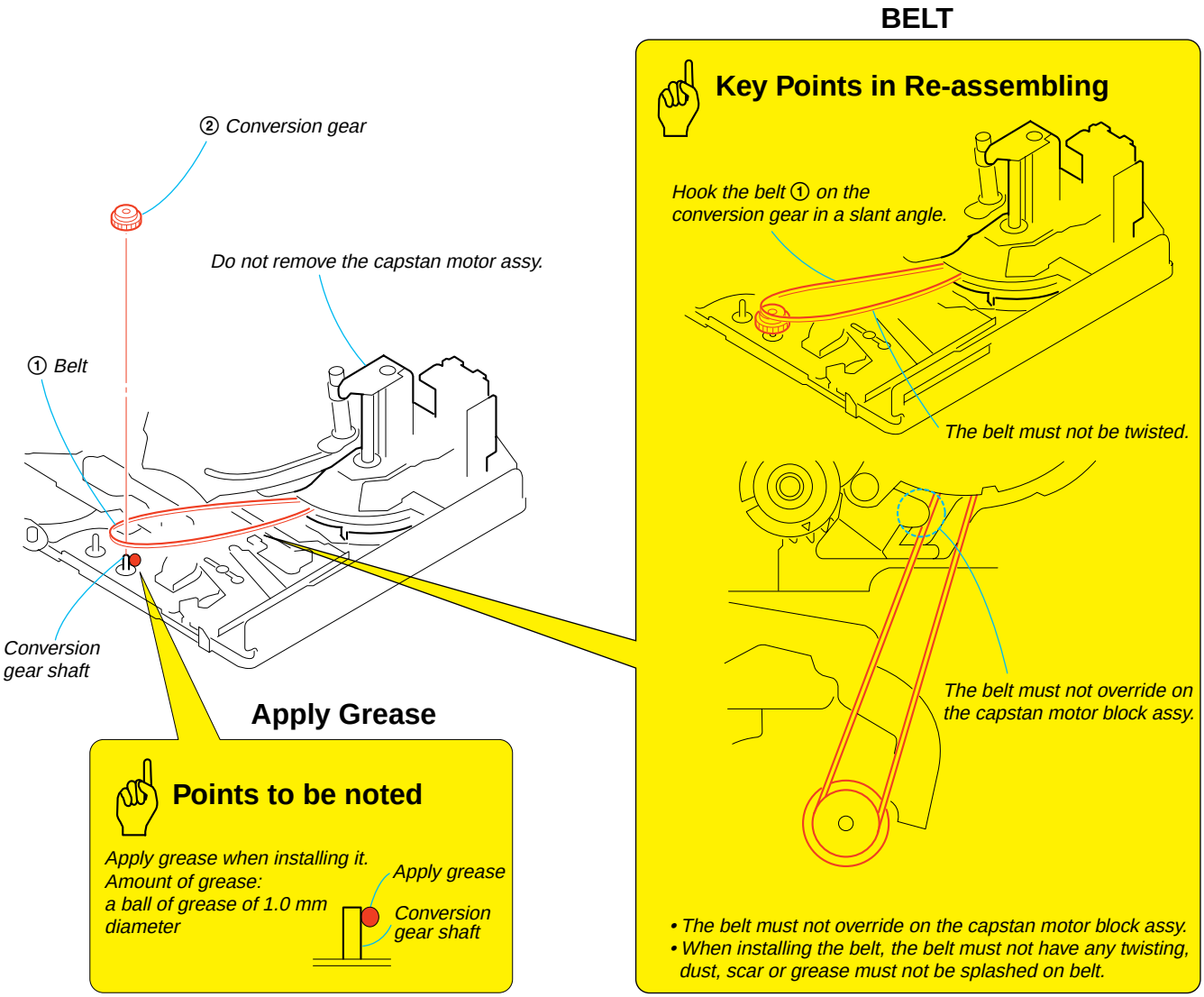
3-24. Conversion Gear

1. Removal procedure

1) Remove the belt ① from the conversion gear.
2) Remove the conversion gear ② from the conversion gear shaft.

2. Attachment procedure

1) Apply grease to the conversion gear shaft.
   Amount of grease: a ball of grease of 1.0 mm diameter
2) Install the conversion gear ② in the conversion gear shaft.
3) Hook the belt ① on the conversion gear in a slant angle and install it by rotating the conversion gear with fingertip.



3-25. Coaster (S) Block Assy and Coaster (T) Block Assy

1. Removal procedure

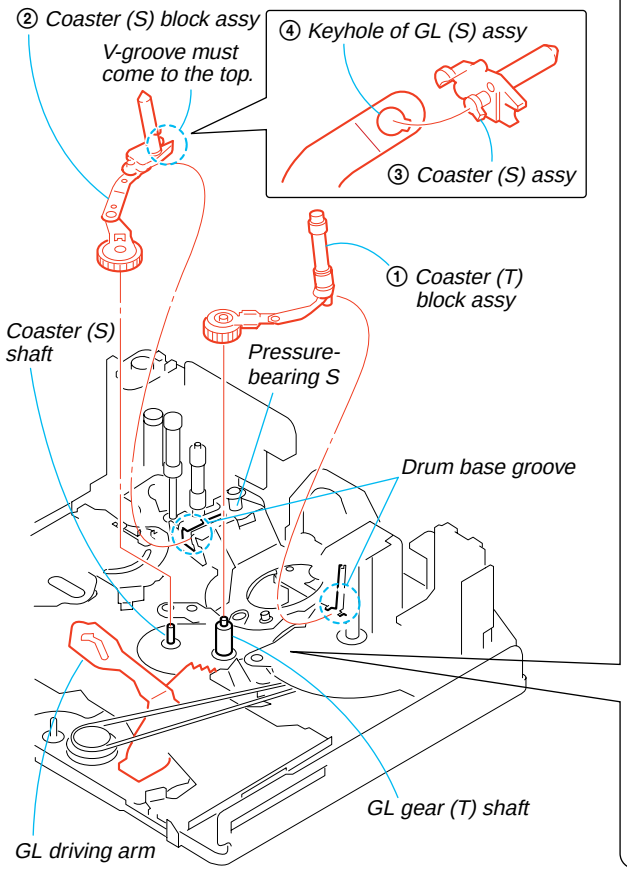
1) Remove the coaster (T) block assy ① from the coaster (T) block shaft. Remove the coaster (T) block assy from the right groove of the drum base.
2) Remove the coaster (S) block assy ② from the coaster (S) block shaft. Remove the coaster (S) block assy from the left groove of the drum base.
3) Remove coaster (S) assy ③ by rotating it through the key hole of GL (S) assy ④.

2. Attachment procedure

1) Install the coaster (S) assy ③ into the key hole of the GL (S) assy ④ by rotating it.
2) Insert the coaster (S) block assy ② into the coaster (S) block shaft. While aligning it with the left groove of the drum base, push it in the way that the V-groove comes to the top until it reaches the pressure-bearing S.
3) Push in the coaster (T) block assy ① along with the right groove of the drum base. Align the phase of the GL gear S, GL gear T and the GL drive arm at the three phasing locations. Then install the coaster (T) block assy ① in the coaster (T) block assy shaft.

Key Points in Re-assembling

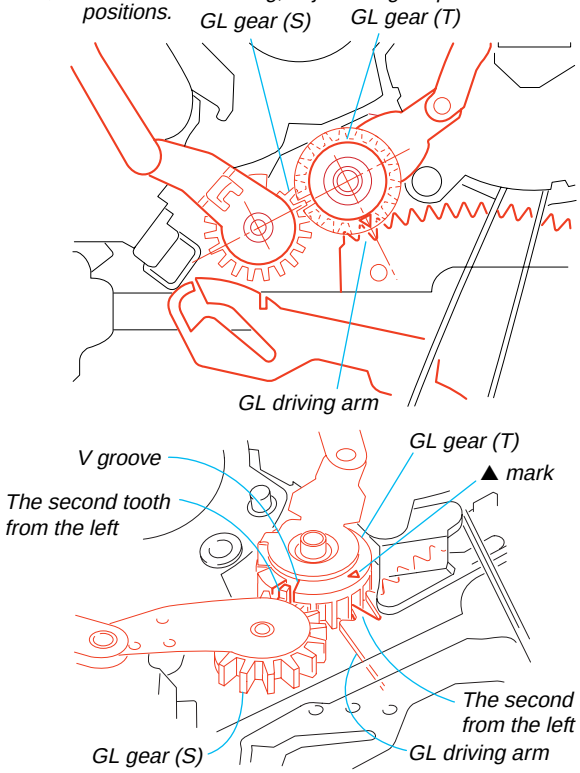
- *When aligning the coaster (S) assy with the left groove of the drum base, the V-groove must come to the top.*
- *TG4 and TG5 must not have any stain and their arms must not be deformed.*



Phase Adjustment

Key Points in Re-assembling

When re-assembling, adjust the gear phase at the three positions.



- *The second tooth from the left of the GL gear (S) and the V-groove of the GL gear (T) must be in phase.*
- *The second tooth from the left of the GL drive arm and the ▲ mark must be in phase.*

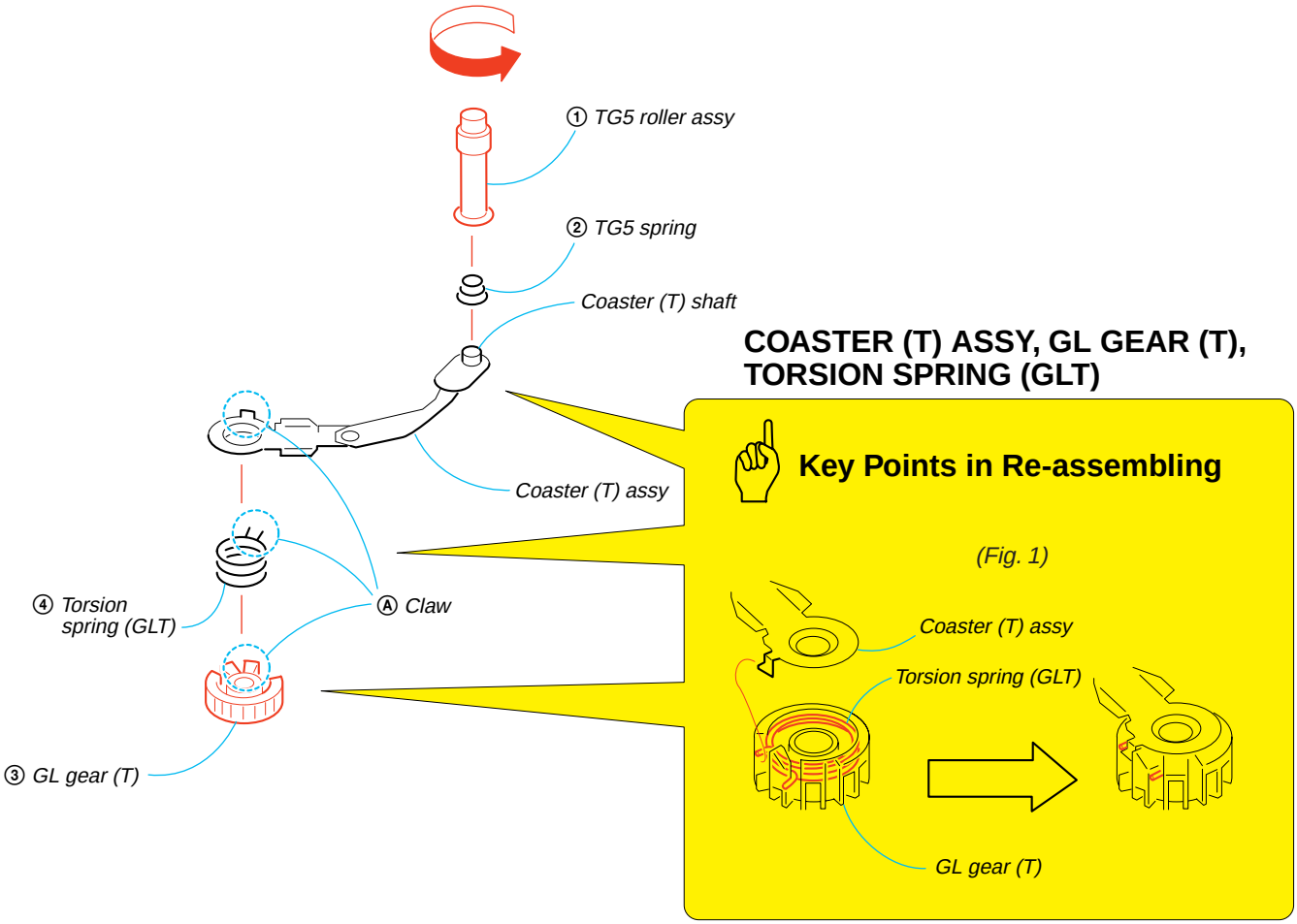
3-26. TG5 Roller Assy and GL Gear (T)

1. Removal procedure

1) Rotate the TG5 roller assy ① in the direction of the arrow and remove the TG5 roller assy ① and the TG5 spring ② from the coaster (T) assy.
2) Release the claw (A) and remove the GL gear (T) ③ and the torsion coil spring (GLT) ④ from the coaster (T) assy.

2. Attachment procedure

1) Install the GL gear (T) ③ and the torsion coil spring (GLT) ④ into the coaster (T) assy.
2) Install the TG5 spring ② into the coaster (T) assy.
3) Install the TG5 roller assy ① into the coaster (T) assy by rotating it in the direction opposite to the arrow.



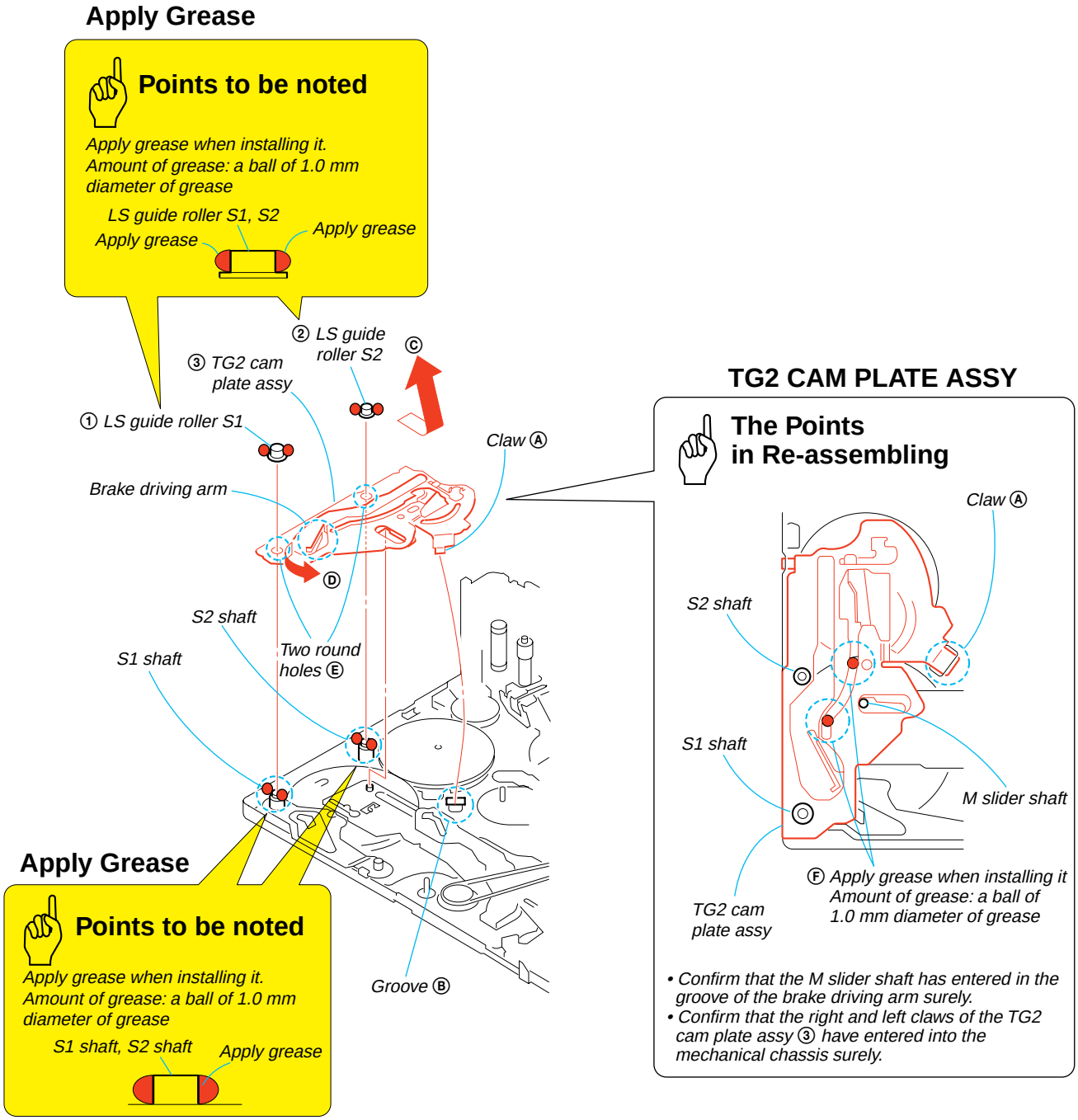
3-27. TG2 Cam Plate Assy

1. Removal procedure

1) Remove the LS guide roller (S1) ① from the S1 shaft.
2) Remove the LS guide roller (S2) ② from the S2 shaft.
3) Release the claw Ⓐ of the TG2 cam plate assy ③ from the right groove Ⓑ of the mechanical chassis.
4) Remove the TG2 cam plate assy ③ in the direction of the arrow Ⓒ.

2. Attachment procedure

1) Move the brake driving arm of the TG2 cam plate assy ③ in the direction of the arrow Ⓓ.
2) Insert the right claw Ⓐ of the TG2 cam plate assy ③ into the right groove Ⓑ of the mechanical chassis first.
3) Install the two round holes Ⓔ of the TG2 cam plate assy ③ into the S1 shaft and the S2 shaft.
4) Apply grease in the Ⓕ portion of the TG2 cam plate assy.
   Amount of grease: a ball of 1.0 mm diameter of grease
5) Apply grease to both sides of the S1 shaft and the S2 shaft.
   Amount of grease: a ball of 1.0 mm diameter of grease
6) Apply grease to both sides of the LS guide roller S1, S2.
7) Install the LS guide roller S1 ① in the S1 shaft.
8) Install the LS guide roller S2 ② in the S2 shaft.



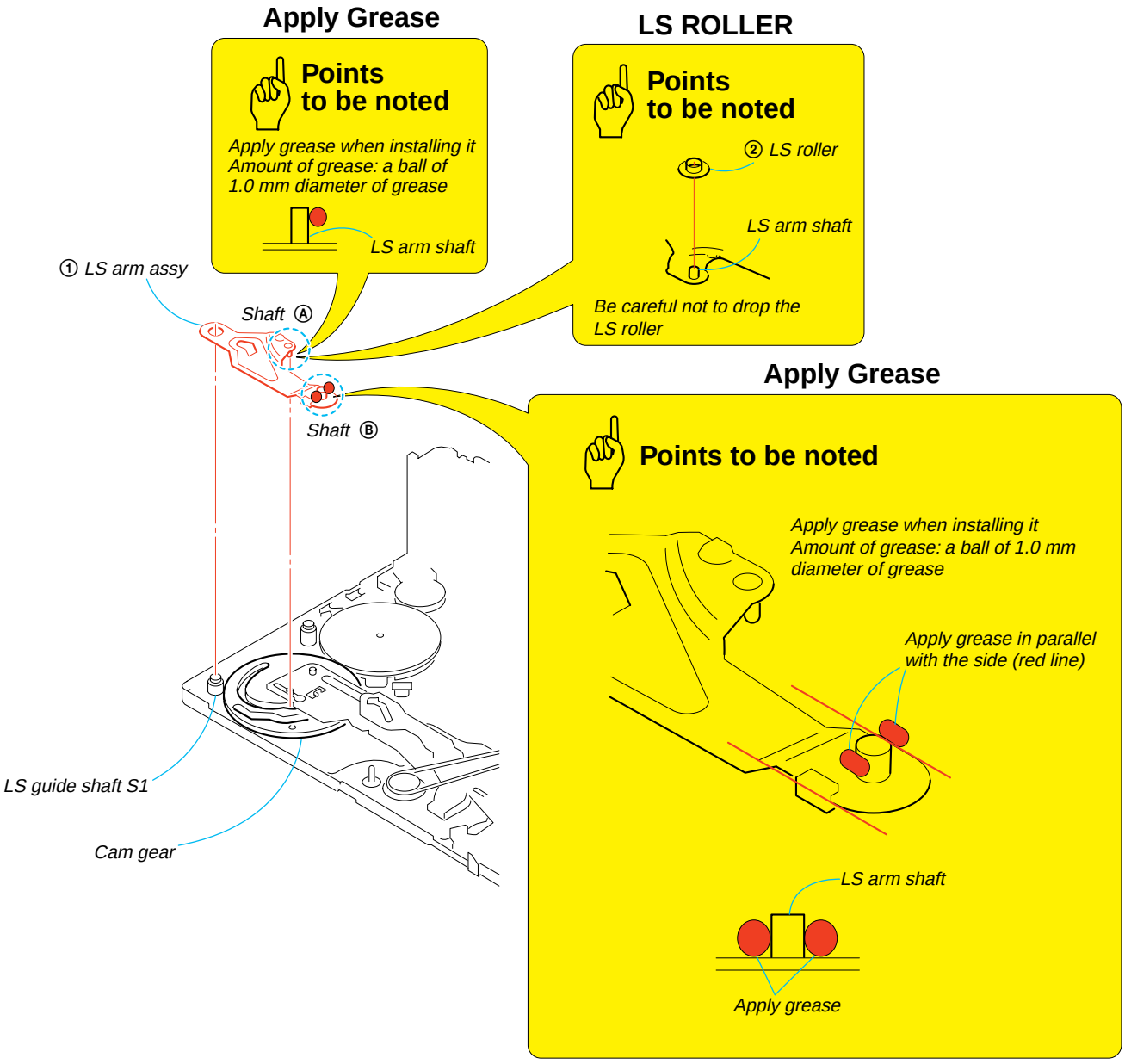
3-28. LS Arm Assy

1. Removal procedure

1) Remove the LS arm assy ① from the LS guide S1 shaft.
2) Turn over the LS arm assy and remove the LS roller ②.

2. Attachment procedure

1) Apply grease to the LS arm shaft Ⓐ (on the side).
2) Install the LS roller ② into the LS arm shaft.
3) Turn over the LS arm assy ① and install it while matching the phase of the LS guide shaft S1 and the cam gear groove.
4) Apply grease to the LS arm shaft Ⓑ (on its side).



3-29. M Slider Assy (1)

1. Removal procedure

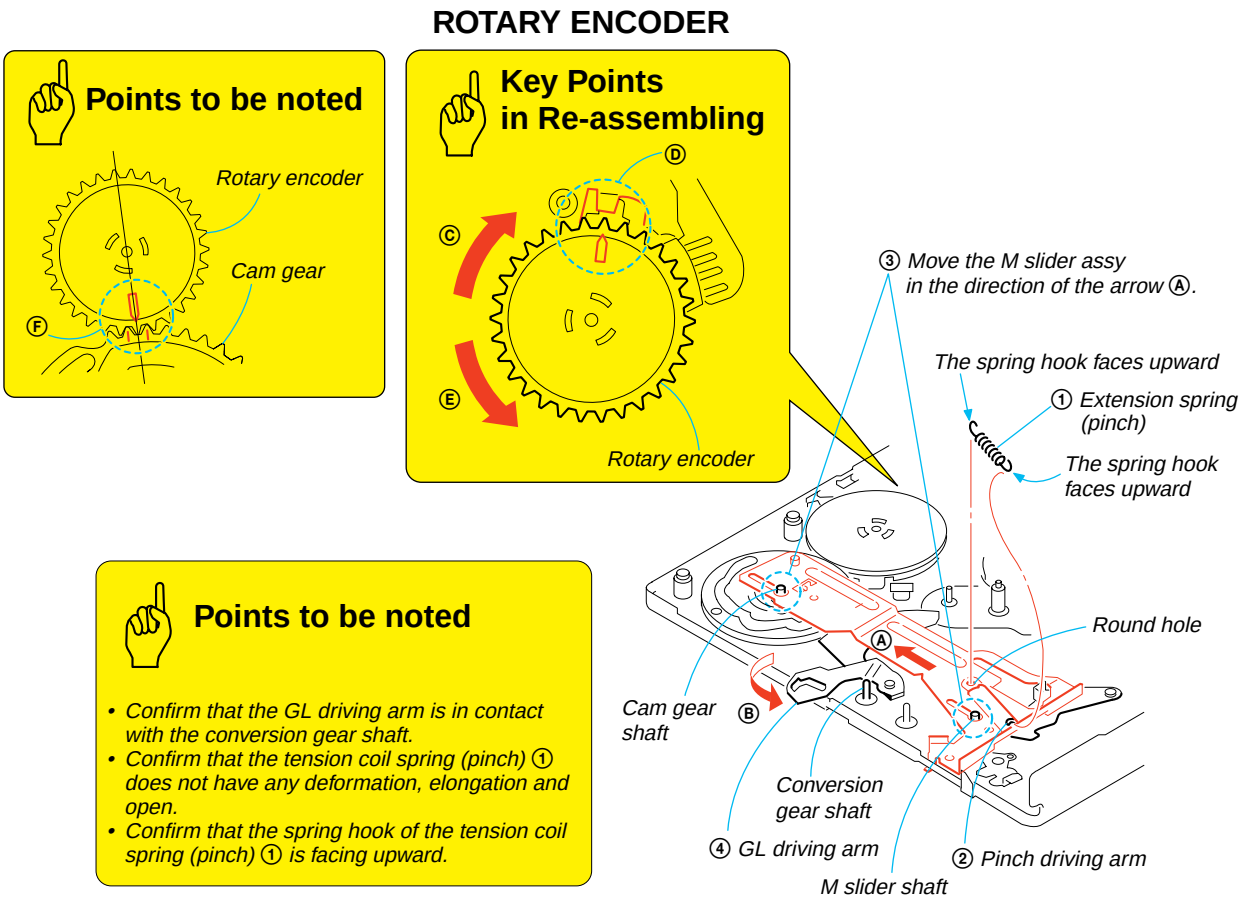
1) Remove an end of the tension spring (pinch) ① from the round hole of the M slider.
2) Remove another end of the tension spring (pinch) ① from the pinch driving arm ②.
3) Rotate the rotary encoder in the direction of the arrow Ⓔ, and align the ▲ mark of ratary encoder with the tooth bottom between second and third teeth Ⓕ. Move by hand in the direction of the arrow Ⓐ until the cam gear shaft and M slider shaft match with the shaft hole of the M slider assy ③.
4) Push in the direction of the arrow Ⓑ until the GL driving arm ④ gets in contact with the conversion gear shaft.

(to be continued to next items 5) through 7) on next page)

2. Attachment procedure

(continued from the previous items 1) through 5) on next page)

6) Move the conversion gear shaft in the direction opposite tot he arrow mark Ⓑ as far as it can go.
7) Rotate the rotary encoder in the direction of the arrow Ⓒ until the ▲ mark arrives at the position Ⓓ.
8) Install an end of the tension coil spring (pinch) ① on the pinch driving arm ② (in the way that spring hook faces upward).
9) Install another end of the tension coil spring (pinch) ① on the round hole of the M slider (in the way that spring hook faces upward).



3-30. M Slider Assy (2)

1. Removal procedure

(continued from the previous items 1) through 5) on previous page)

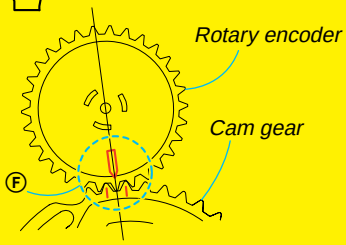
5) Remove the cam gear shaft and the M slider shaft from the two shaft holes Ⓐ of the M slider assy ①.
6) Remove the top tip Ⓑ of the M slider assy ① from the notch of the mechanical chassis in the direction of the arrow.
7) Remove the M slider assy ①.

2. Attachment procedure

1) Apply grease to the cam gear shaft and the M slider shaft (neck groove of the shaft where the M slider slides).
   Amount of grease: a ball of 1.0 mm diameter of grease
2) Align the hole of the pinch driving arm and the hole of the mechanical chassis.
3) Insert the top tip Ⓑ of the M slider assy ① into the notch of the mechanism chassis, and at the same time install the M slider assy ① into the GL driving arm.
4) Align the ▲ mark of rotary encoder with the tooth bottom between second and third teeth Ⓕ.
5) Install the cam gear shaft and the M slider shaft into the tow shaft holes Ⓐ of the M slider assy.

(to be continued to next items 6) through 9) on previous page)

Points to be noted



M SLIDER ASSY

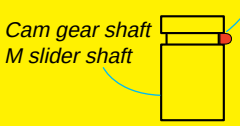
Key Points in Re-assembling

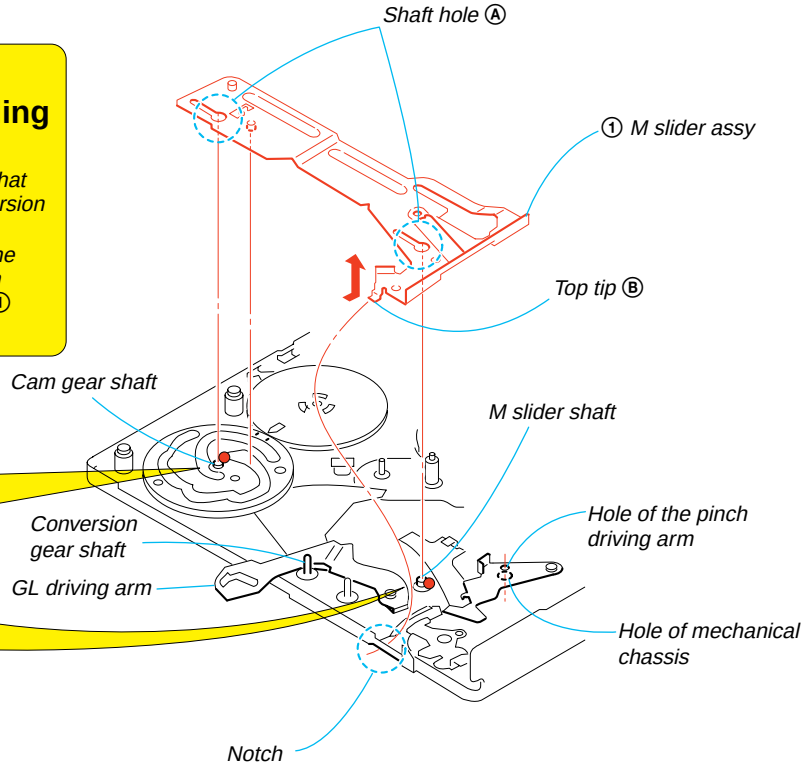
- *When installing the M slider assy ①, confirm that the GL driving arm is in contact with the conversion gear shaft.*
- *Confirm that you have not forgotten to insert the top tip Ⓑ of the M slider assy ① into the notch of the mechanical chassis. The M slider assy ① should not have any deformation.*

Apply Grease

Points to be noted

Apply grease when installing it
Amount of grease: a ball of 1.0 mm diameter of grease
Neck groove of the shaft where the M slider slides





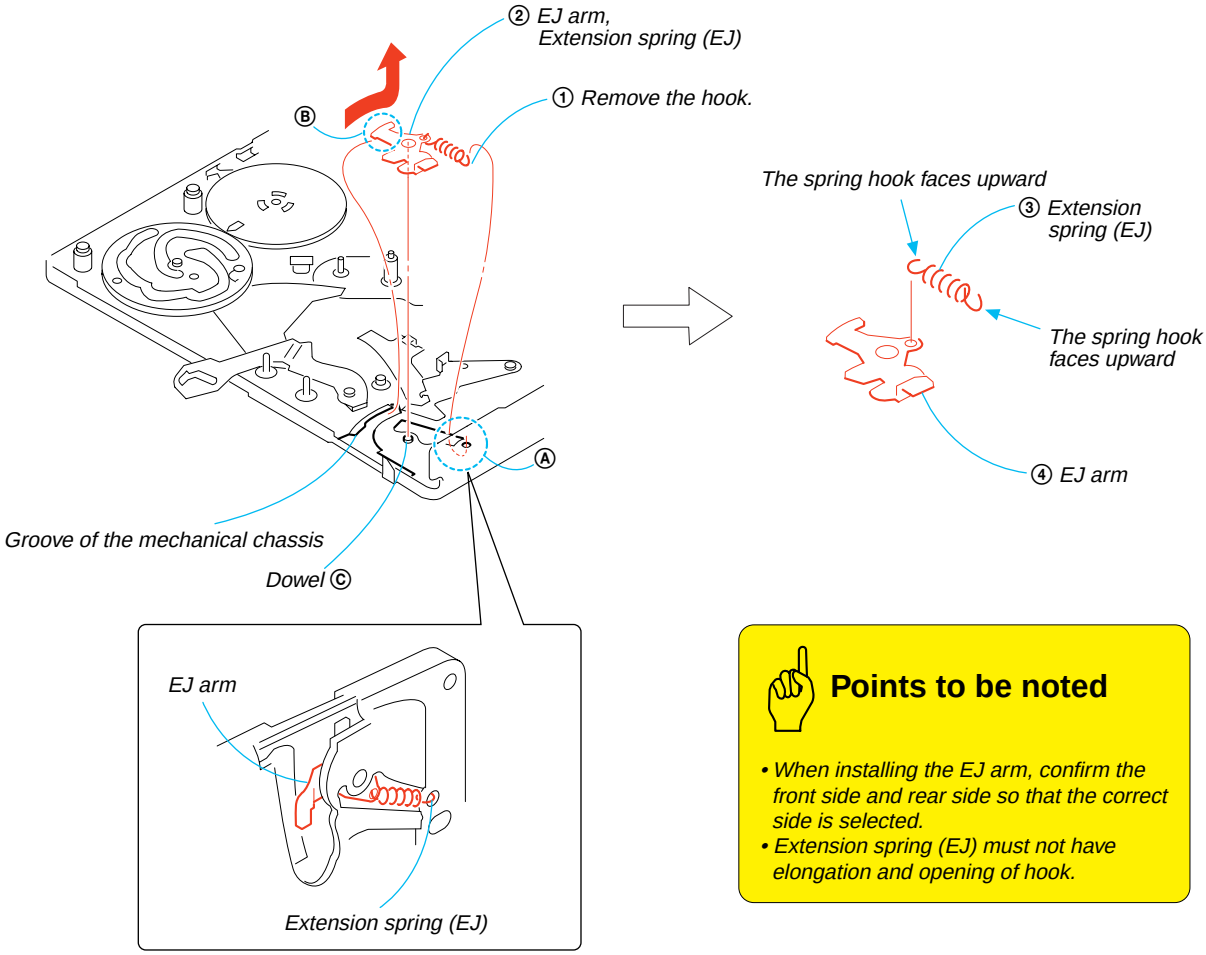
3-31. EJ Arm

1. Removal procedure

1) Remove the hook ① of the tension coil spring (EJ arm) ③ that is hooked on the round hole Ⓐ.
2) Remove the EJ arm and the tension coil spring (EJ arm) ② all together in the direction of the arrow.
3) Remove the tension coil spring (EJ arm) ③ from the EJ arm ④.

2. Attachment procedure

1) Install the tension coil spring (EJ arm) ③ into the round hole of the EJ arm ④ with the hook facing upward.
2) Insert the top tip (bent) portion Ⓑ of the EJ arm ④ into the groove of the mechanical chassis. Insert the dowel Ⓒ into the round hole of the EJ arm.
3) Insert he tension coil spring ① into the round hole Ⓐ of the mechanical chassis with the hook facing upward.



Points to be noted

- *When installing the EJ arm, confirm the front side and rear side so that the correct side is selected.*
- *Extension spring (EJ) must not have elongation and opening of hook.*

3-32. Cam Gear and GL Driving

1. Removal procedure

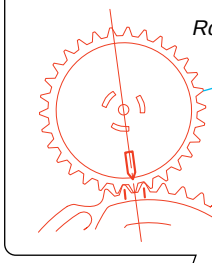
1) Rotate the GL driving arm Ⓗ block assy in the direction of the arrow Ⓘ until it contacts with the conversion gear shaft.
2) Remove the cam gear ②.
3) Remove the GL driving arm ③.

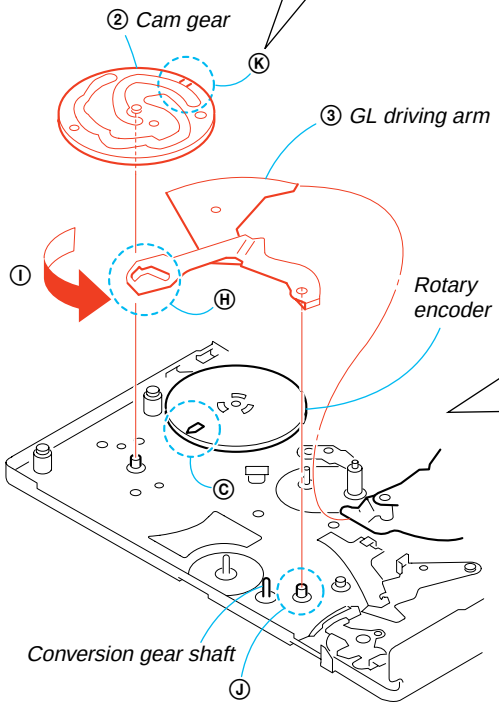
2. Attachment procedure

1) Insert the GL driving arm ③ into the shaft Ⓙ of the mechanical chassis and rotate the GL driving arm Ⓗ block assy in the direction of the arrow Ⓘ until it contacts with the conversion gear shaft.
2) Confirm the front side and rear side of the cam gear ② so that the correct side is selected. Install the cam gear ② while matching phase of the ▲ mark Ⓒ with the second tooth valley Ⓚ and the third tooth valley Ⓚ of the cam gear.
3) Apply grease to the specified locations Ⓐ to Ⓖ of the cam gear.

Matching Phase

Key Points in Re-assembling



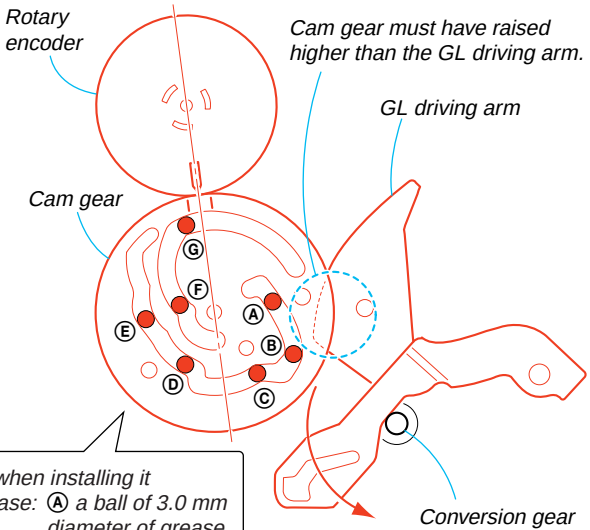


Points to be noted

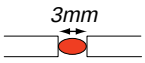
- *Confirm that the phase of the cam gear and that of the rotary encoder are matched and in phase.*
- *Confirm that the cam gear overrides on the GL driving arm.*
- *Confirm that the GL driving arm is contact with the conversion shaft.*
- *Do not apply grease to any locations other than the specified location. Apply grease of the specified amount.*

Notes When Applying Grease and During Installation

Key Points in Re-assembling



Apply grease when installing it
Amount of grease: Ⓐ a ball of 3.0 mm diameter of grease Ⓑ to Ⓖ a ball of 2.0 mm diameter of grease



Sides of the both grooves

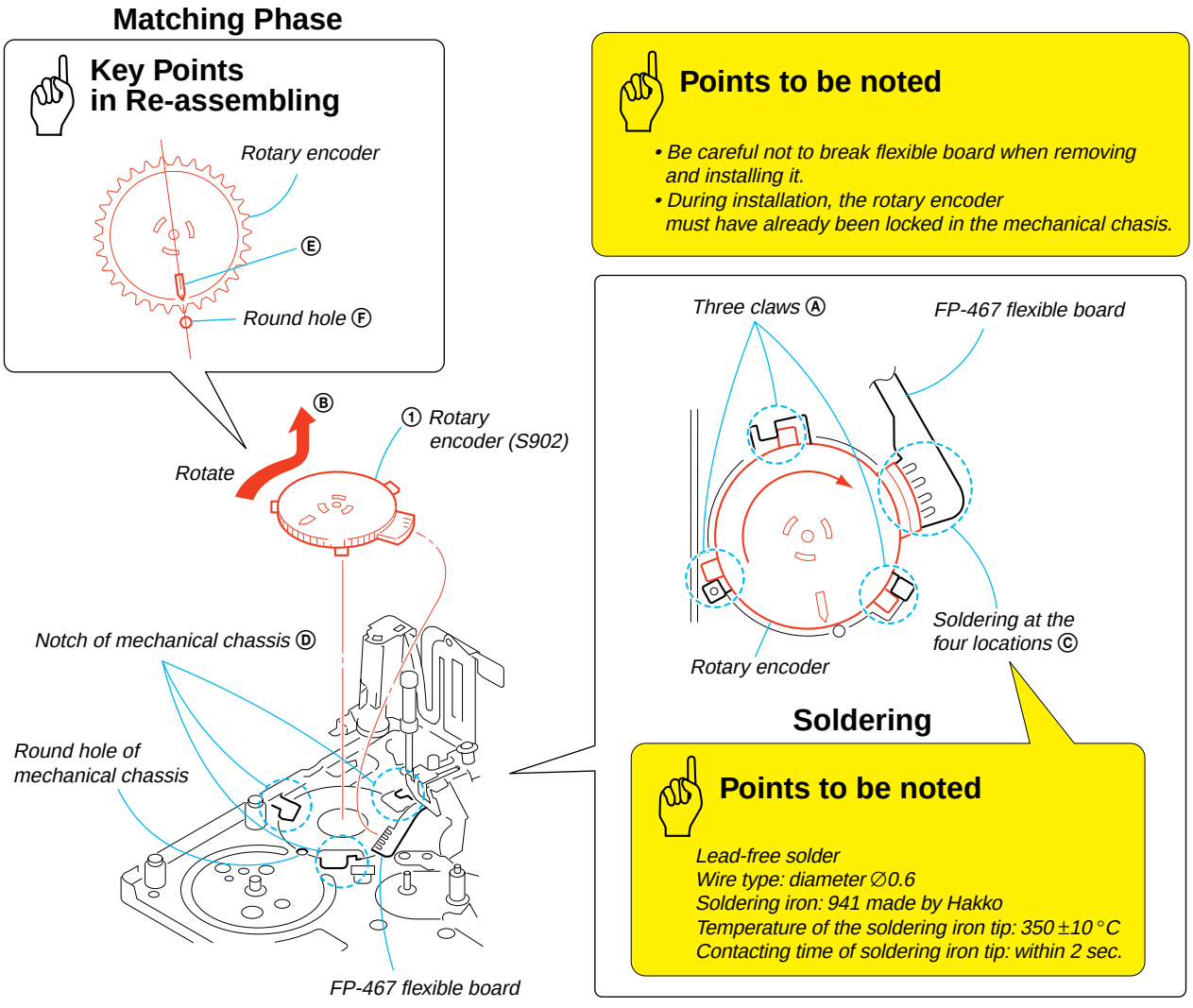
3-33. Rotary Encoder (S902)

1. Removal procedure

1) Remove the three claws Ⓐ of the rotary encoder (S902) ① from the three notches of the mechanical chassis.
2) Rotate the rotary encoder (S902) ① in the direction of the arrow Ⓑ and remove.
3) Remove soldering (at the four locations) Ⓒ to which the rotary encoder (S902) is attached.

2. Attachment procedure

1) Make soldering (at the four locations) Ⓒ so that the rotary encoder (S902) ① is connected to the FP-467 flexible board.
2) Place the rotary encoder (S902) ① on top of the notch Ⓓ of the mechanical chassis. Lock the three claws Ⓐ of the rotary encoder (S902) ① into the notches Ⓓ of the mechanical chassis.
3) Match the phase of the ▲ mark Ⓔ of the rotary encoder (S902) ① with the phase of the round hole Ⓕ of the mechanical chassis.



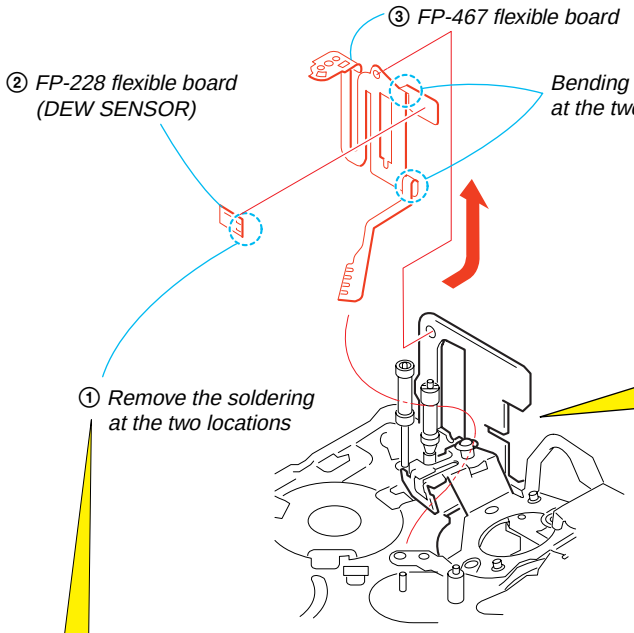
3-34. FP-228 Flexible Board (DEW SENSOR) and FP-467 Flexible Board

1. Removal procedure

1) Remove the soldering at the two locations ① and remove the FP-228 flexible board (DEW SENSOR) ②.
2) Remove the FP-467 flexible board ③ from the mechanical chassis in the direction of the arrow.

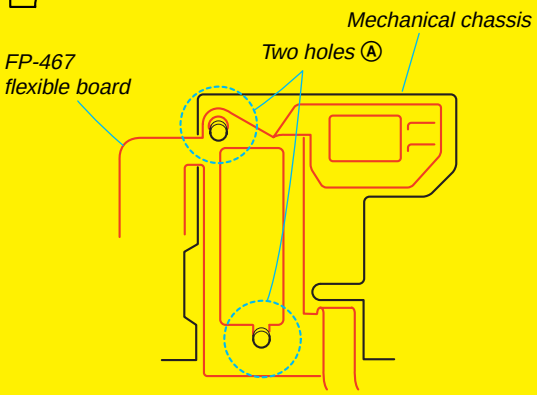
2. Attachment procedure

1) Match the phase of the two holes Ⓐ of the FP-467 flexible board ③ with the holes of the mechanical chassis, and attach them each other.
2) Attach the FP-228 flexible board (DEW SENSOR) ② to the FP-467 flexible board ③.
3) Connect the terminals at the two locations ① by soldering.



FP-467 FLEXIBLE BOARD

Key Points in Re-assembling



Soldering

Points to be noted

Lead-free solder
Temperature of the soldering iron tip: 350 °C
Contacting time of soldering iron tip: within 2 sec.

- *Be careful not to create the hollow soldering, Br, and there must be no lacking of parts. There must not be solder ball.*
- *Be careful not to contact the soldering iron tip too long time.*

Points to be noted

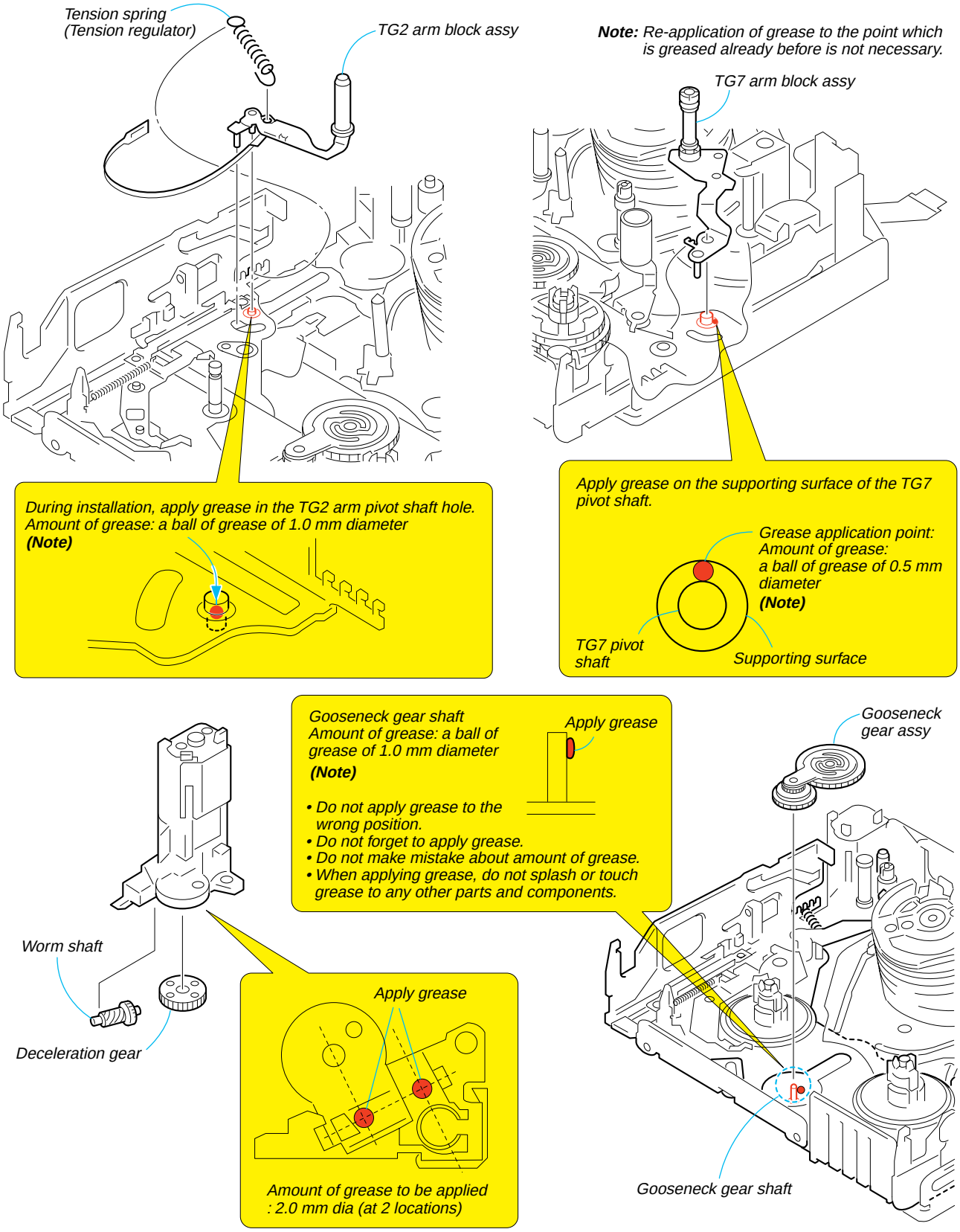
- *Be careful not to break the flexible board to have open circuit when installing and removing it.*
- *Be careful that flexible board must not override on anything.*
- *Be careful that the two bending portions of the FP-467 flexible board must not be bent excessively that results in open circuit and breakdown of flexible board.*
- *Do not rub the DEW sensor with any rubbing bars.*

2003.01.30

HELP

Application of grease, soldering method and precautions, and phase matching adjustment are compiled and below.

Apply grease (1)

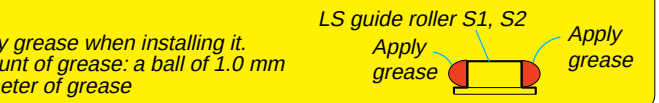


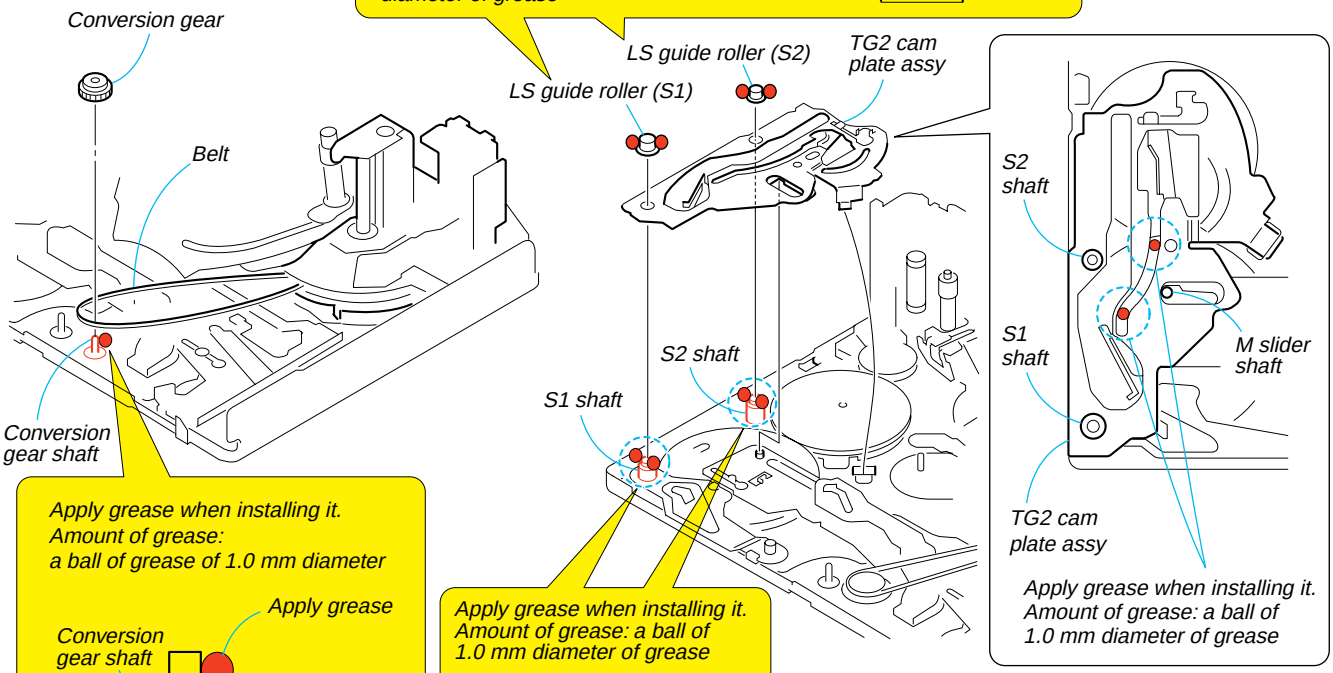
Apply grease (2)

Apply Grease

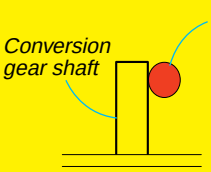
Points to be noted

Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease



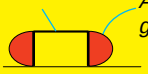


Apply grease when installing it.
Amount of grease:
a ball of grease of 1.0 mm diameter



Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

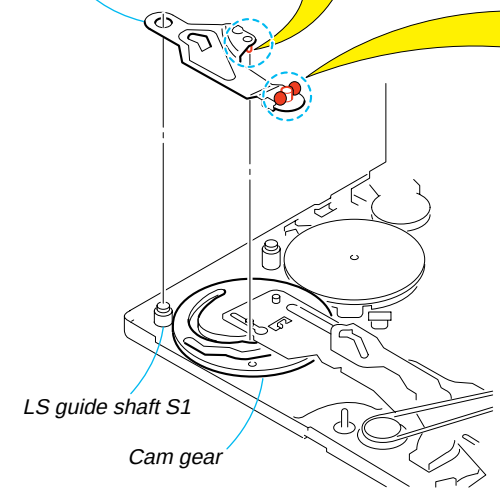
S1 shaft, S2 shaft



Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

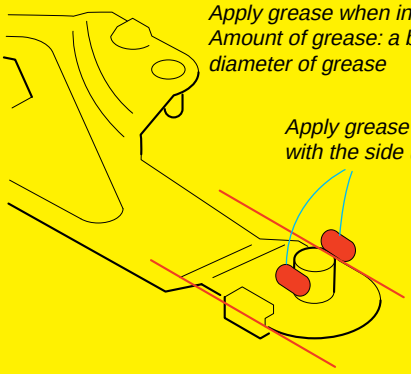
Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

LS arm shaft

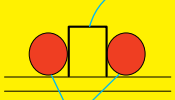


Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

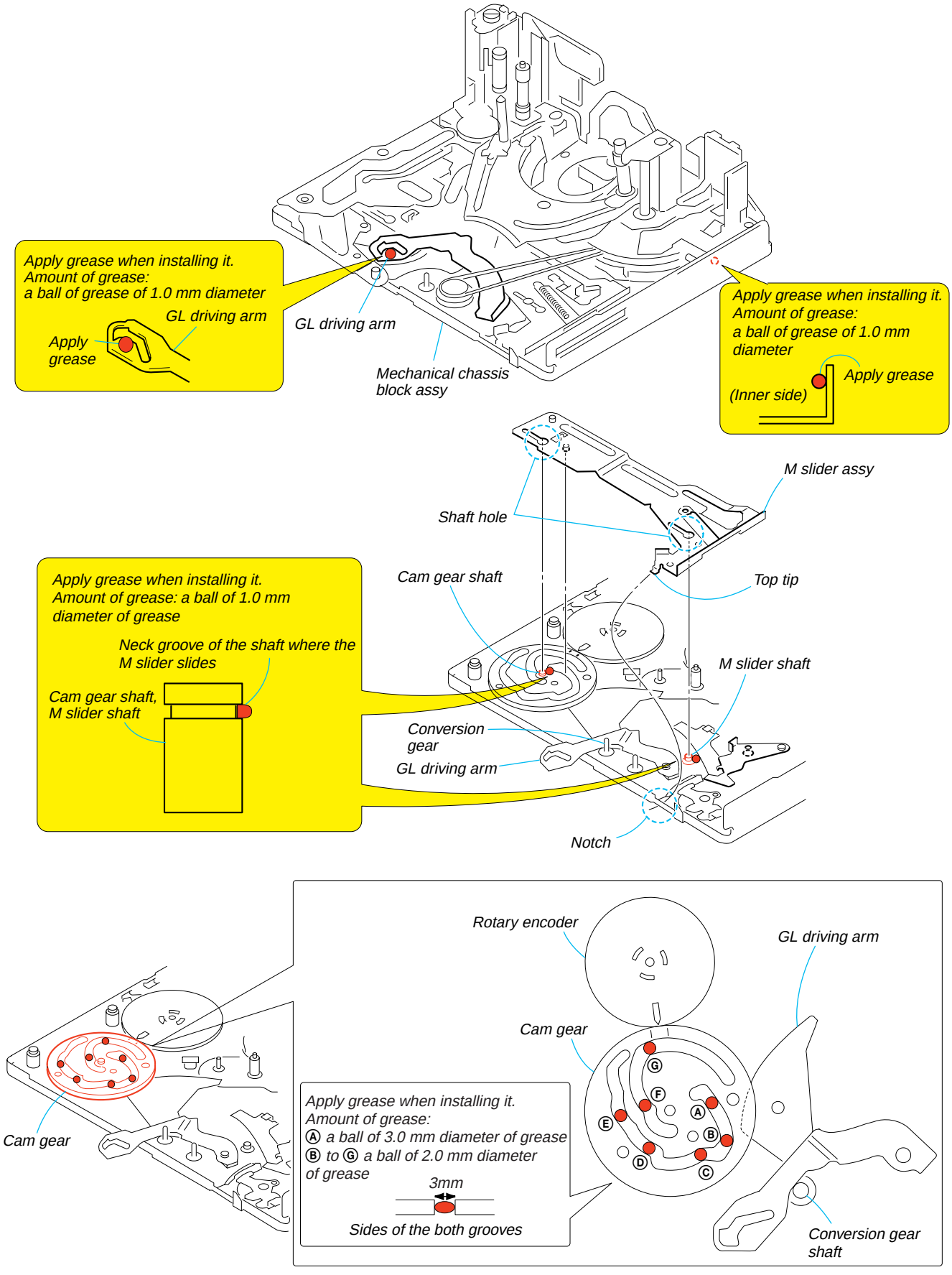
Apply grease in parallel with the side (red line)



LS arm shaft



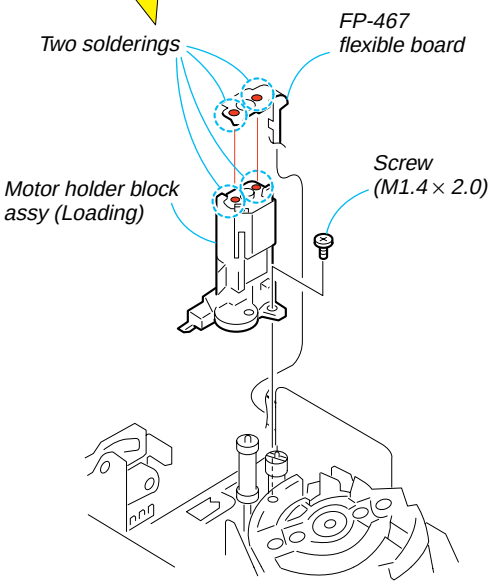
Apply grease (3)

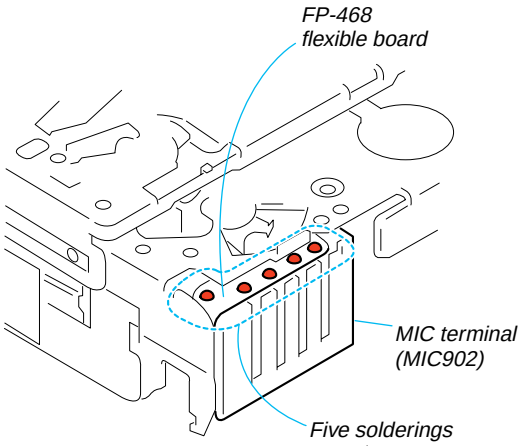


Soldering (1)

Lead-free solder
Wire type : ∅0.6
Temperature of the soldering iron tip : 320 °C
Contacting time of soldering iron tip : within 2 sec.

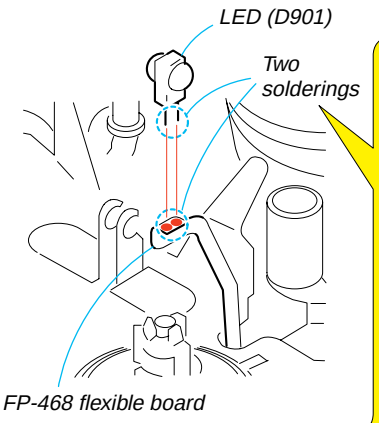
- Be careful not to create the hollow soldering, Br, and there must be no lacking of parts.
- Be careful not to melt the detent of the holder.
- Be careful not to melt the END cover.
- Be careful not to break the terminals due to attaching the soldering iron too long time.



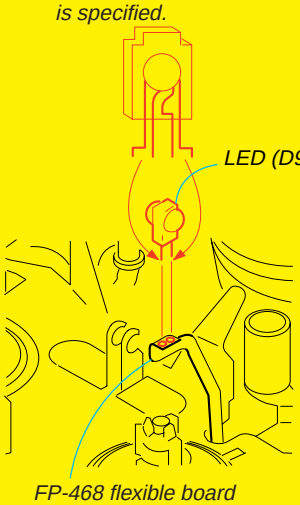


Use the rubber finger tip cover
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

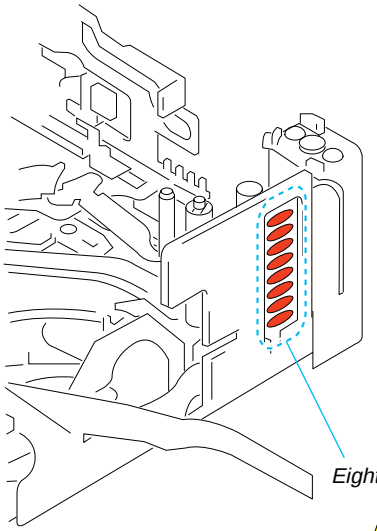
Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec



Direction of the terminal is specified.



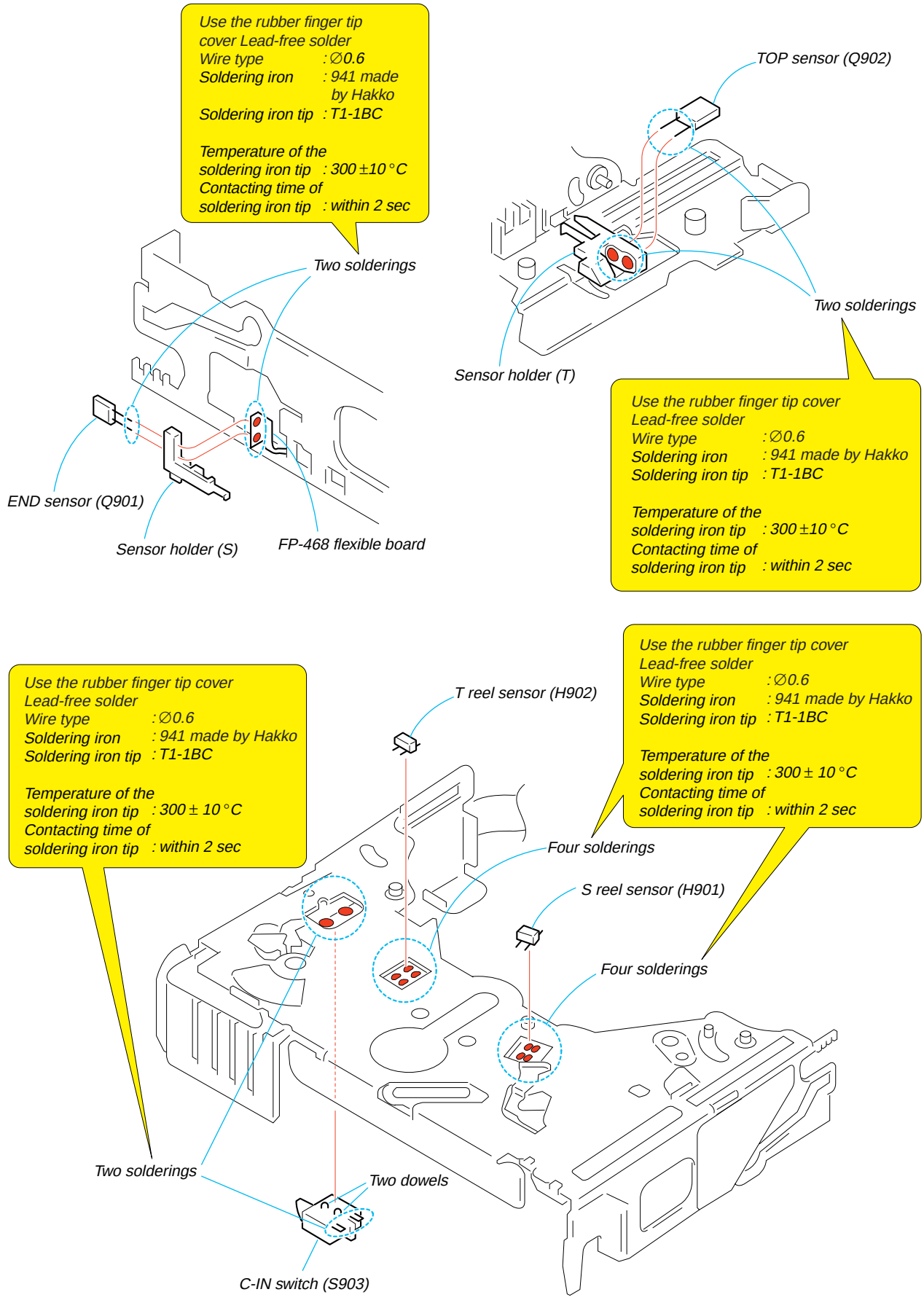
Rubber finger tip protection cover must be used.
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Soldering iron tip: T1-1BC
Temperature of the soldering iron tip: 300 ±10 °C
Contacting time of soldering iron tip: within 2 sec.



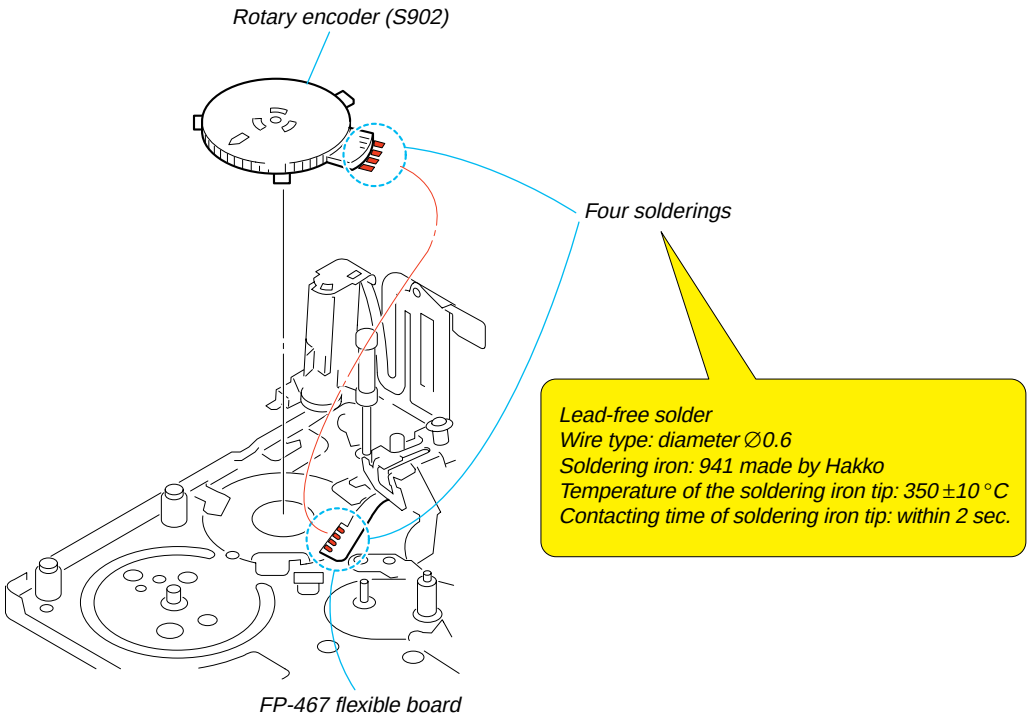
Lead-free solder
Wire type: diameter 0.6 ∅
Temperature of the soldering iron tip: 350 °C
Contacting time of soldering iron tip: within 2 sec.

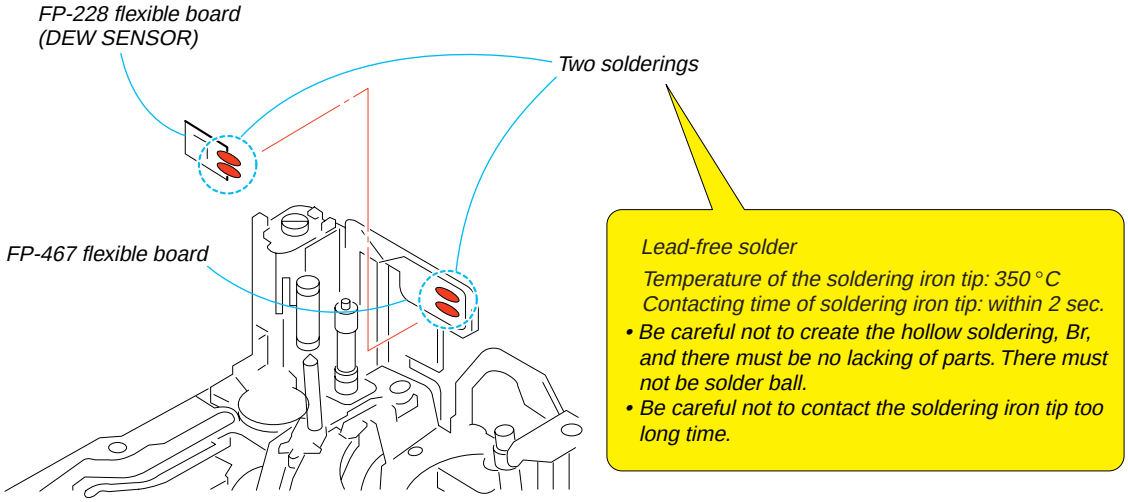
- Be careful not to create the hollow soldering, Br, and there must be no lacking of parts.
- Be careful not to crash the grip jog to the TG1 guide.

Soldering (2)

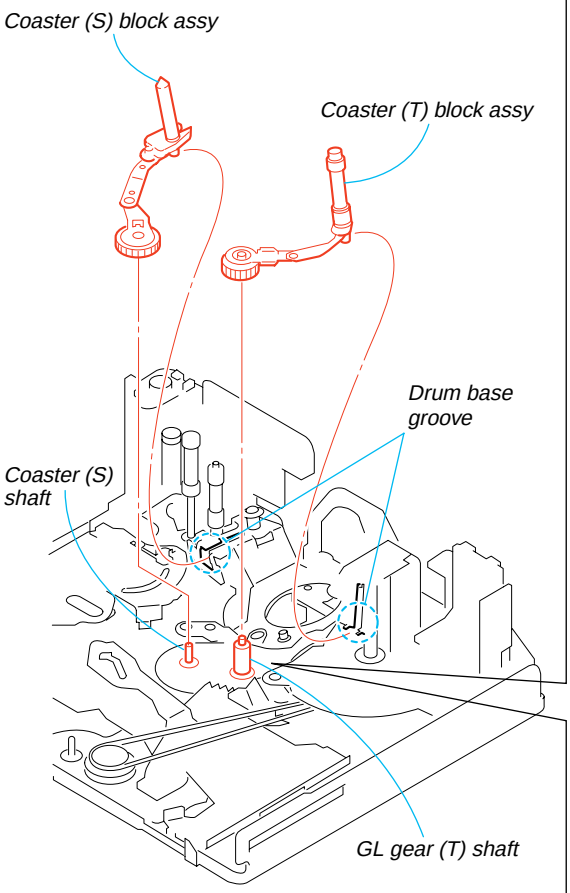

Use the rubber finger tip cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC
Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec
Two solderings
END sensor (Q901)
Sensor holder (S)
FP-468 flexible board
TOP sensor (Q902)
Two solderings
Sensor holder (T)
Use the rubber finger tip cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC
Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec
Use the rubber finger tip cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC
Temperature of the soldering iron tip : 300 ± 10 °C
Contacting time of soldering iron tip : within 2 sec
T reel sensor (H902)
Four solderings
S reel sensor (H901)
Four solderings
Two solderings
Two dowels
C-IN switch (S903)

Soldering (3)

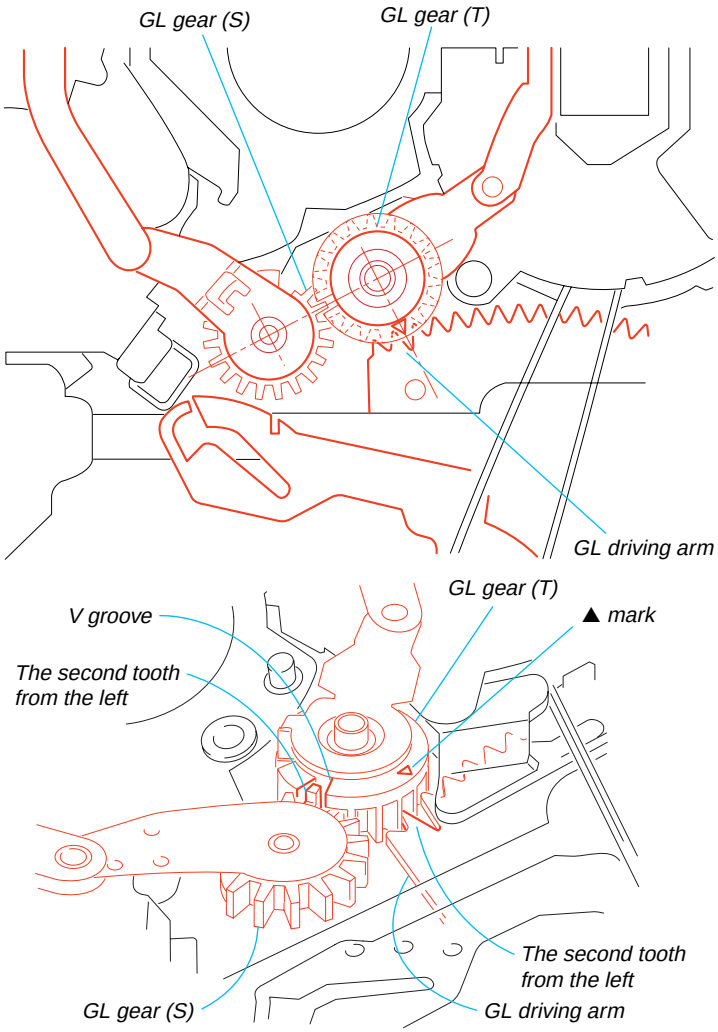

Rotary encoder (S902)
Four solderings
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Temperature of the soldering iron tip: 350 ±10 °C
Contacting time of soldering iron tip: within 2 sec.
FP-467 flexible board


FP-228 flexible board
(DEW SENSOR)
Two solderings
FP-467 flexible board
Lead-free solder
Temperature of the soldering iron tip: 350 °C
Contacting time of soldering iron tip: within 2 sec.
• Be careful not to create the hollow soldering, Br, and there must be no lacking of parts. There must not be solder ball.
• Be careful not to contact the soldering iron tip too long time.

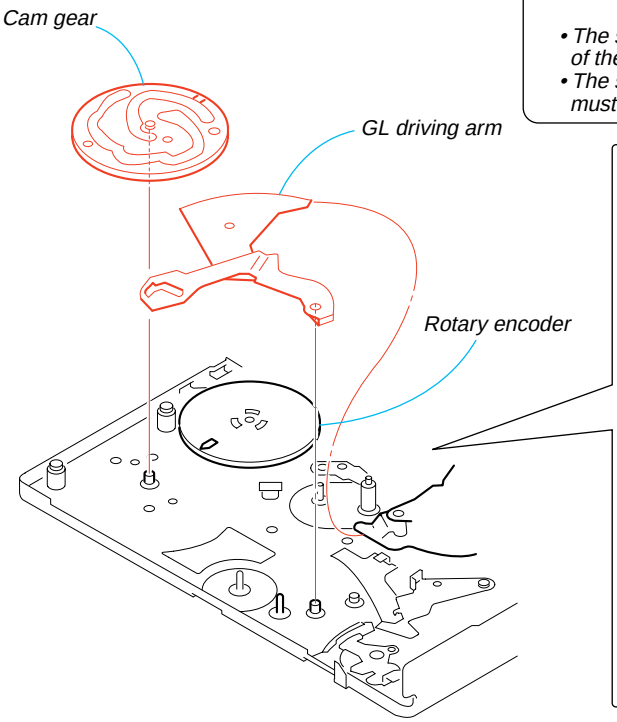
Matching Phase

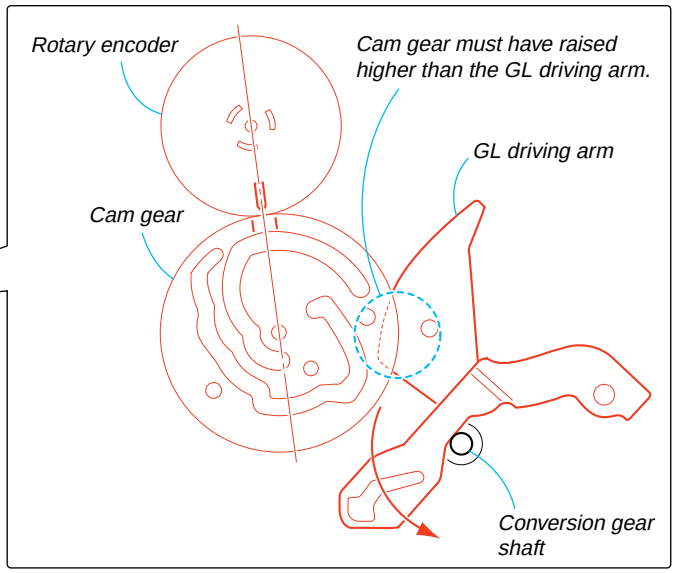


When re-assembling, adjust the gear phase at the three positions.



- The second tooth from the left of the GL gear (S) and the V-groove of the GL gear (T) must be in phase.
- The second tooth from the left of the GL drive arm and the ▲ mark must be in phase.





4. Adjustment

4-1. FWD Position Adjustment

When the TG2 arm block assy or the band adjuster or the S reel table assy is replaced or removed, the following adjustment becomes necessary.

- TG2 FWD Position Adjustment (Refer to section 4-4.)
- FWD Back Tension Adjustment (Refer to section 4-4.)
- Reel Table (RVS) Check (Refer to section 4-2.)

1) Set the R/P mode and check the TG2 guide position as follows.
   - Confirm that the distance between the TG2 guide and the L motor is 1.0 mm. If not, perform adjustment as follows.
2) Loosen the fixing screw. Use the adjustment screwdriver (Ref No. J-8) and adjust the band adjuster for the distance of 1.0 mm between the TG2 guide and the L motor. Upon completion of adjustment, tighten the fixing screw securely as follows.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 ± 0.1 kgf•cm)
   Note: Upon completion of adjustment, confirm that TG2 can move with some margin in the direction of the arrow Ⓐ.

4-2. Reel Torque Check

1. Check Procedure

[FWD torque]

1) Set the mini DV torque cassette (Ref. No. J-6).
2) Establish the FWD mode. Confirm that the center value of the T reel table torque value is in the range of 0.49 to 0.93 (mN•m) (5.0 to 9.5 g•cm) within deviation of 0.39 (mN•m) (4.0 g•cm)

[RVS torque]

1) Set the mini DV torque cassette (Ref. No. J-6).
2) Establish the RVS mode. Confirm that the center value of the S reel table torque value is in the range of 1.57 to 2.45 (mN•m) (16.0 to 25.0 g•cm)

If the above specification is not satisfied, check the tension regulator band for correct operation. If operation of the tension regulator band has no problem, replace the respective reel tables.

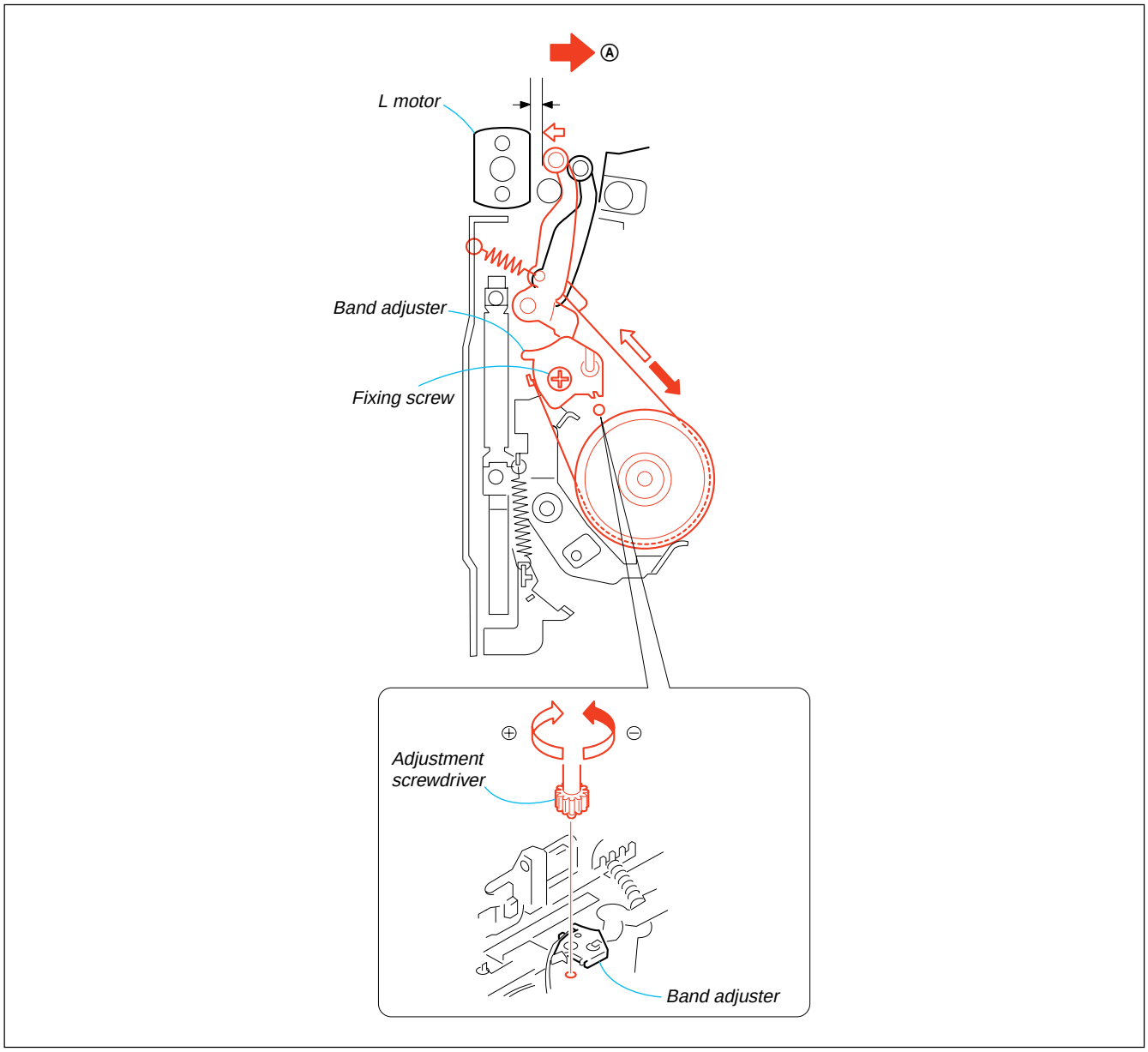


Fig. 4-1

4-3. LS Cam Plate Position Adjustment

1. Adjustment Procedure

1) Loosen the LS cam plate fixing screw (special head screw M1.4 × 1.4) by 180 degrees.
2) Set the STOP mode.
3) While pressing the center of the LS chassis block with the force of 1.5 ± 0.5 N (150 gf ± 50 gf), move the LS cam plate toward the S reel side with the force of 0.147 ± 0.01 N•m (2300 gf ± 200 gf) and tighten the LS cam plate fixing screw (special head screw M1.4 × 1.4) ①.
   Tightening torque: 0.098 ± 0.01 N•m (1.0 ± 0.1 kgf•cm)

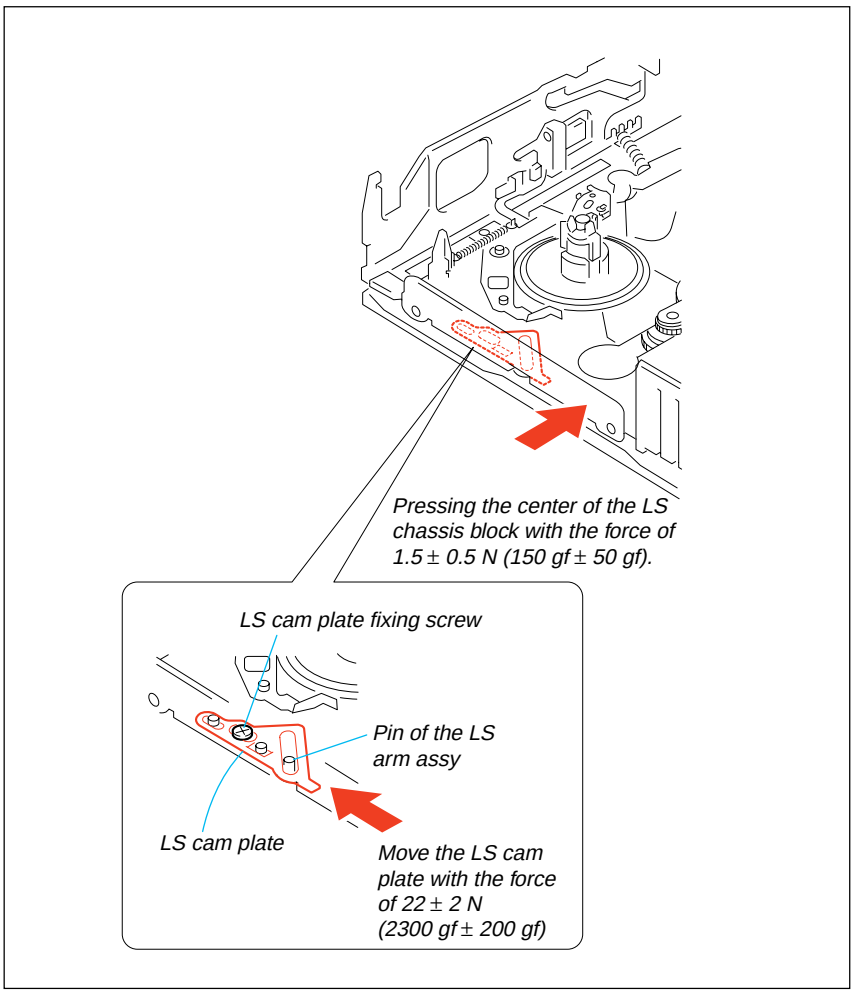


Fig. 4-2

4-4. Tape Path Adjustment

4-1. Adjustment Preparation

1) Clean the tape running surface (tape guides, drum, capstan, pinch roller) referring to section 2-2.
2) Connect the adjustment remote commander (Ref. No. J-13) to the LANC terminal of the machine. Set the HOLD switch to ON.
3) Connect an oscilloscope to CN1004 of the VC-312 board via the CPC-7 jig (J-6082-382-A). (In the case of DCR-TRV22K)
   Oscilloscope CH1: VC-312 board CN1004 pin② (Note 1)
   EXT. TRIG: VC-312 board CN1004 pin④
   Note 1: Connect CN1004 pin② and pin⑥ (GND) with a 75-ohm resistor (1-247-804-11).
4) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
5) Select page: 0, address: 10 and set data: 00. (Note 2)
6) Select page: 3, address: 26 and set data: 31, and press the PAUSE button. (Note 2)
7) Select page: 3, address: 33 and set data: 08. (Note 2)
8) Confirm that the RF waveform on the scope is flat at both of the entrance side and the exit side. (Refer to Fig. 4-4A.)
   If the RF waveform is not flat either at the entrance side or the exit side (refer to Fig. 4-4 B and C), perform the adjustment of section 6-2 and later.
9) When the required conditions of step 8) are satisfied, perform [Required Work upon Completion of Adjustment] as described below upon completion of adjustment/check.

[Required Work upon Completion of Adjustment]

1) Connect the adjustment remote commander (Ref. No. J-13) to the LANC terminal of the machine. Set the HOLD switch to ON.
2) Select page: 0, address: 10 and set data: 00. (Note 2)
3) Select page: 3, address: 26 and set data: 00, and press the PAUSE button. (Note 2)
4) Select page: 3, address: 33 and set data: 00. (Note 2)
   Note 2: Page and address numbers differ depending on each model. Please to Service Manual of the respective models. Page and address numbers of DCR-TRV22K are shown in this manual.

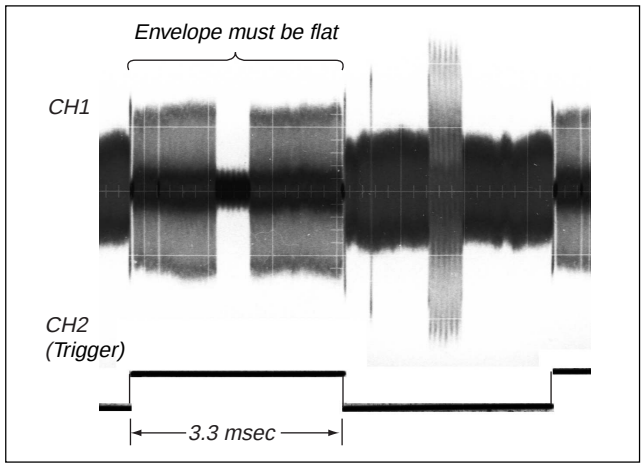


Fig. 4-3

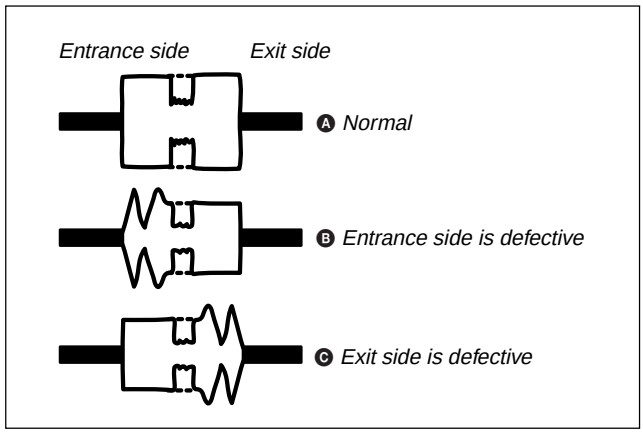


Fig. 4-4

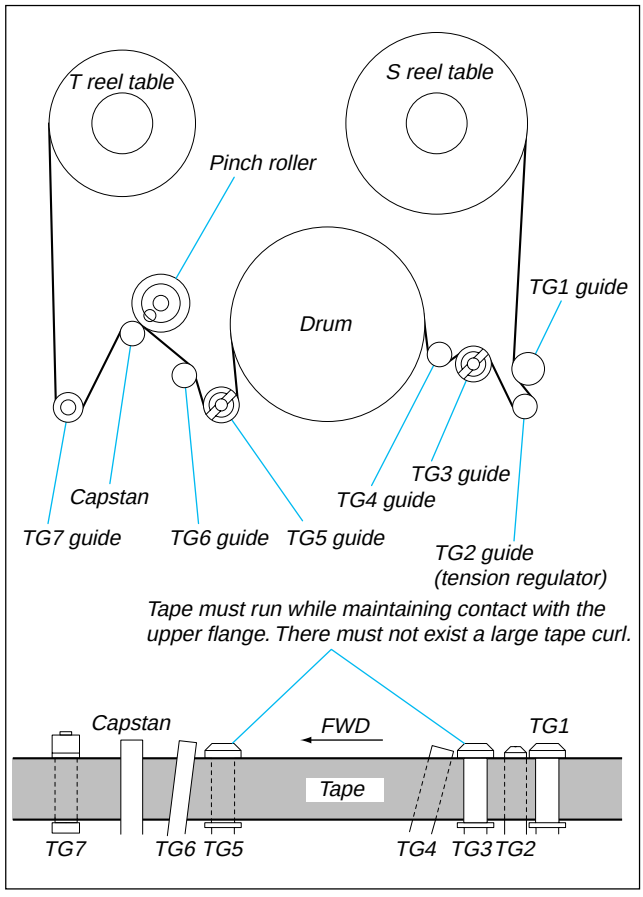


Fig. 4-5

4-2. TG3/TG5 Guide Coarse Adjustment

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Adjust the TG3 and TG5 guides until the RF envelope waveform becomes flat. (Refer to Fig. 4-8.)

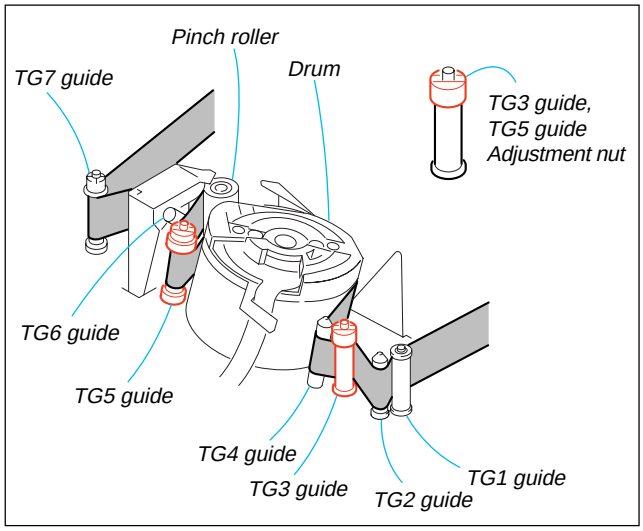


Fig. 4-6

4-3. FWD Back Tension Adjustment

1) Set the mini DV torque cassette (Ref. No. J-6) and establish the FWD mode.
2) Confirm that the S side torque cassette reading value is in the range of 0.2 to 0.3 mN•m (2.0 to 3.0 g•cm) including deviation. If the measurement value does not satisfy the specifications, perform the following adjustment.
   - If the measurement value is higher than the specification: (Decreases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓑ.
   - If the measurement value is lower than the specification: (Increases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓐ.

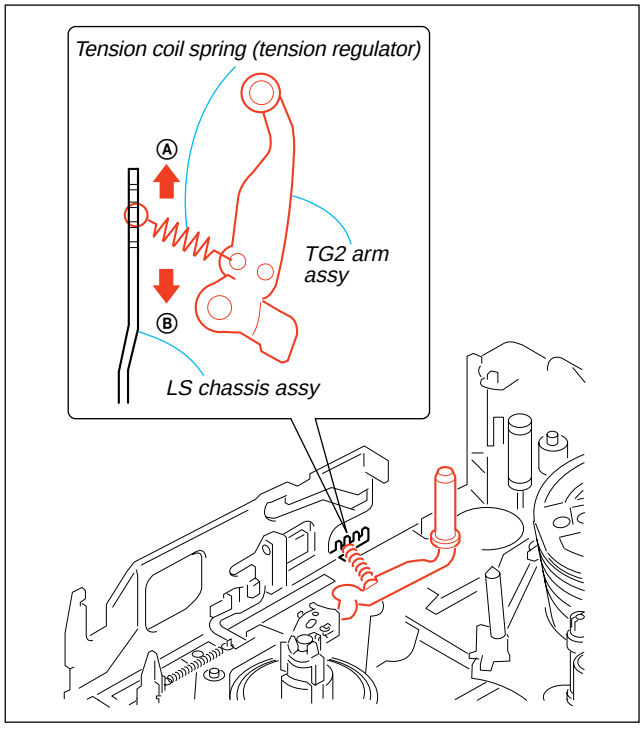


Fig. 4-7

4-4. TG3/TG5 Guide Fine Adjustment

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Adjust the TG3 so that the RF envelope has the larger amplitude at the entrance side first, than adjust TG3 guide for flat amplitude. (Refer to Fig. 4-8.)
3) Adjust the TG5 so that the RF envelope has the larger amplitude at the exit side first, than adjust TG5 guide for flat amplitude. (Refer to Fig. 4-9.)

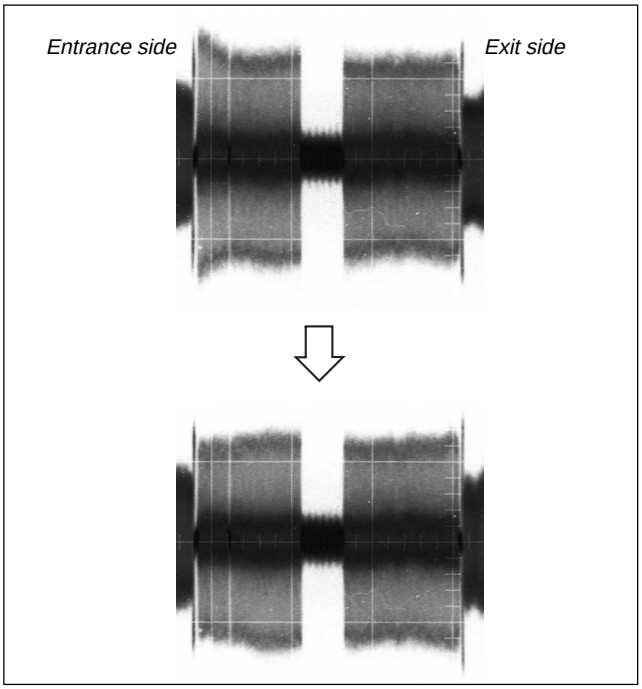


Fig. 4-8

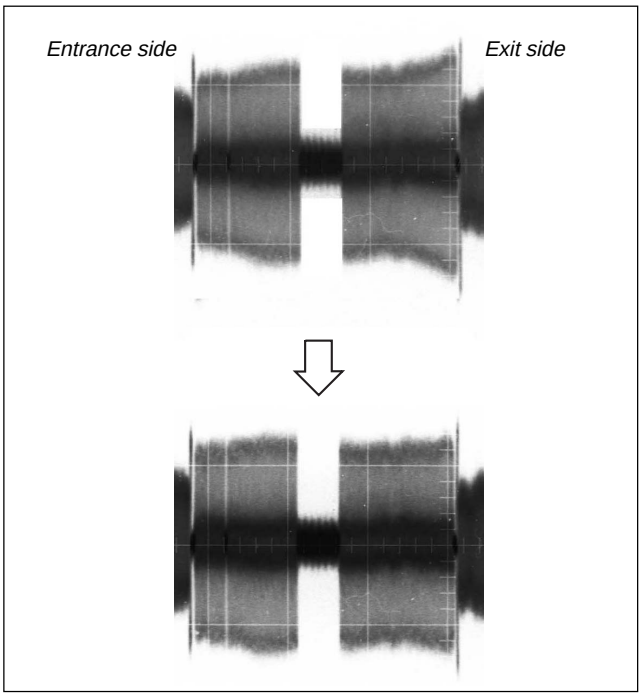


Fig. 4-9

4-5. Tape Run Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5). Establish the CUE mode first then the REV mode. Confirm in the respective modes that there are no large tape curls at the upper flange of TG3 and TG5. Then confirm in the respective modes that there are no large tape curls at the upper and lower flanges of TG1 and TG7.

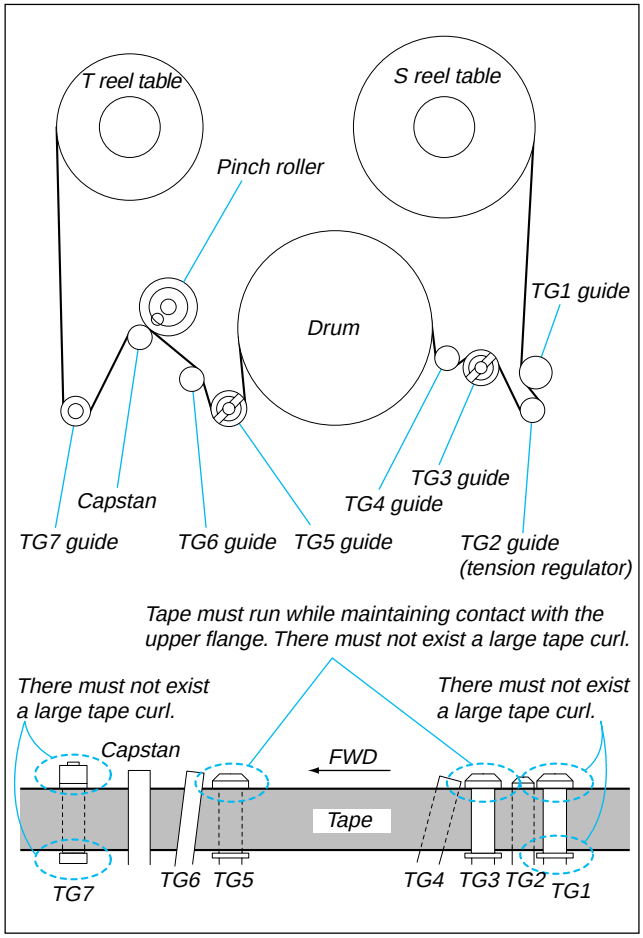


Fig. 4-10

4-6. Check upon Completion of Adjustment

1. Tracking Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Establish the CUE (or REV) mode. Take the amplitude (A) in this mode as the 100% waveform amplitude. (Refer to Fig. 4-11.)
3) Establish the FWD mode. Confirm that the difference between the minimum (E min) and the maximum (E max) is less than 30%. (When taking the amplitude (A) in the CUE or REV mode as 100%)

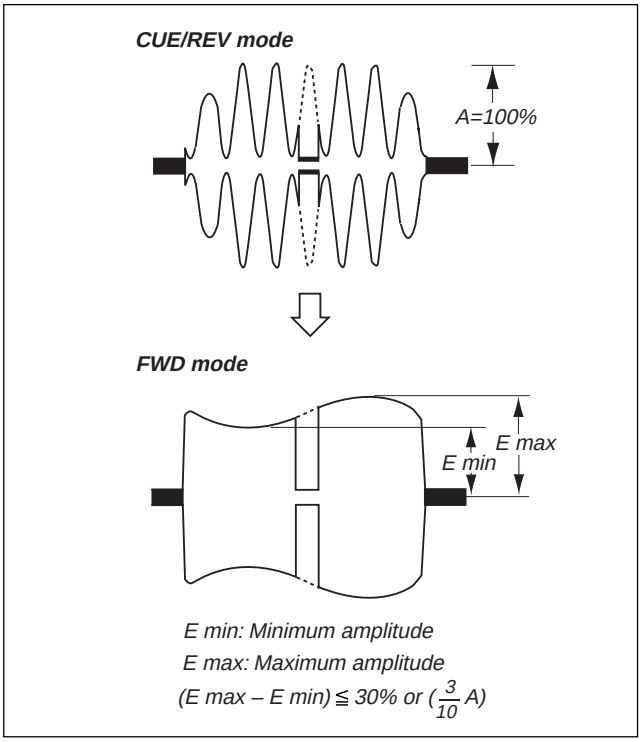


Fig. 4-11

4) Confirm that the RF waveform does not have excessive fluctuation of amplitude. (Fluctuation of amplitude should be 10% or less at both entrance side (B) and exit side (C), when taking the amplitude (A) in the CUE or REV mode as 100%)

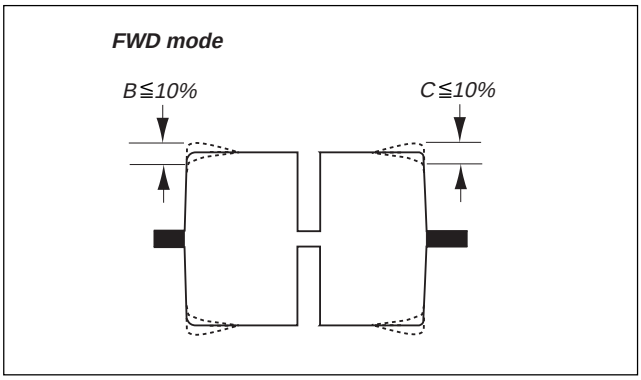


Fig. 4-12

2. CUE/REV Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Establish the CUE mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively, when taking the amplitude (A) in the CUE or REV mode as 100%.
3) Establish the REV mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively.

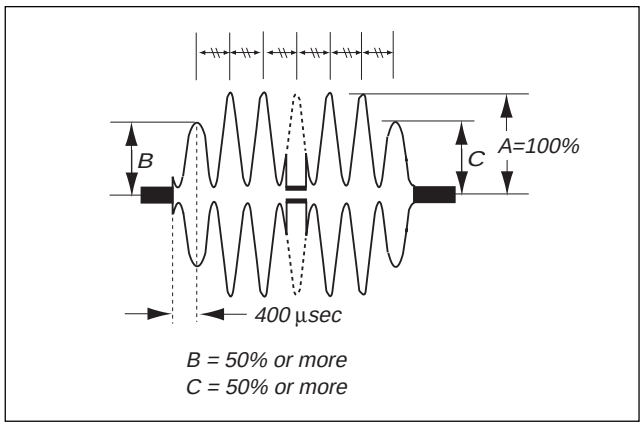


Fig. 4-13

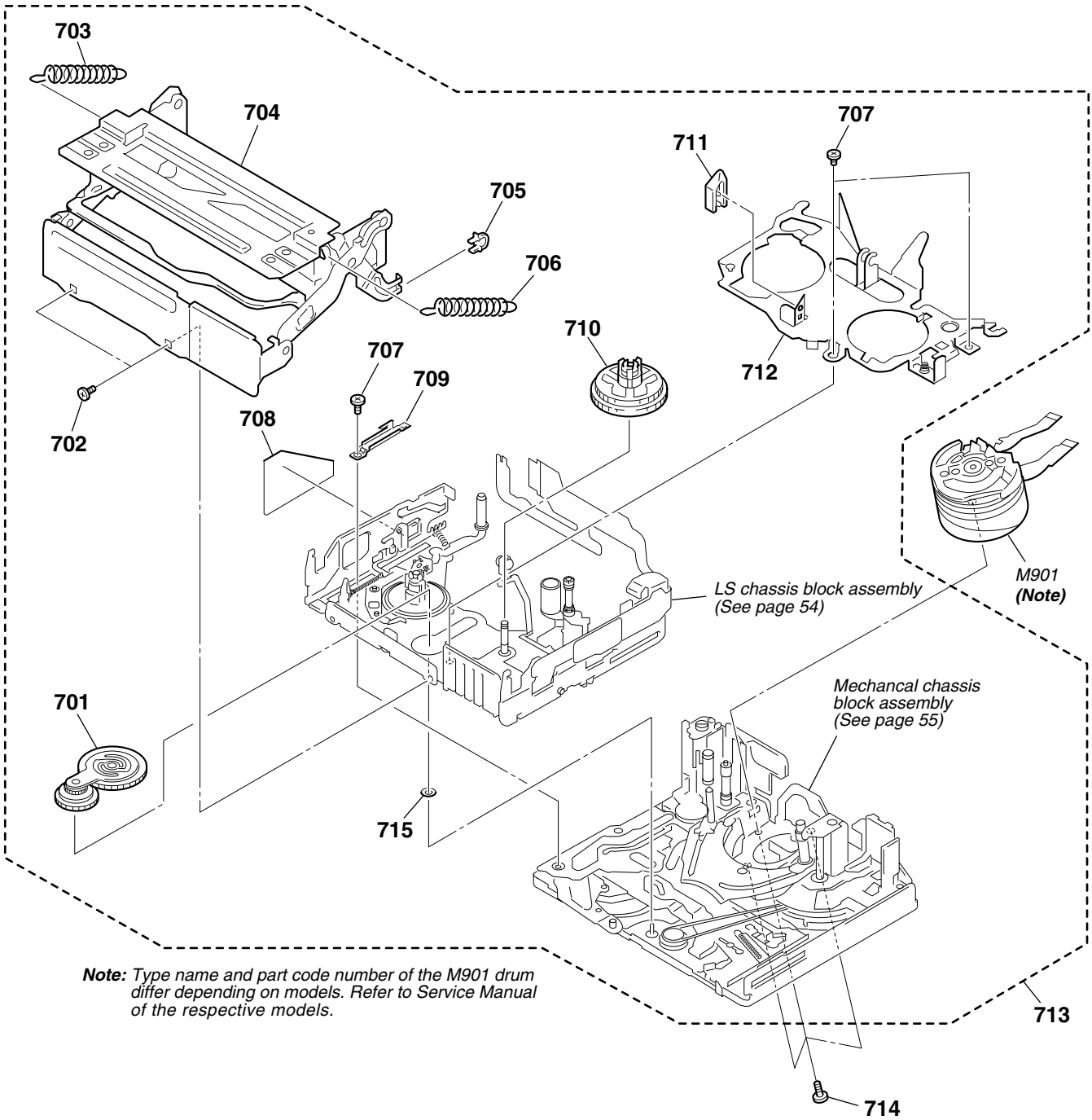
3. Rise-up Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Change the modes from CUE mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from CUE mode to FWD.
3) Change the modes from REV mode (two seconds or more of REV and to the FWD within five seconds) to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from REV mode to FWD.
4) Change the modes from STOP mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from STOP mode to FWD.

5. Exploded Views

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

5-1. Overall Mechanism Deck Section (Z100)

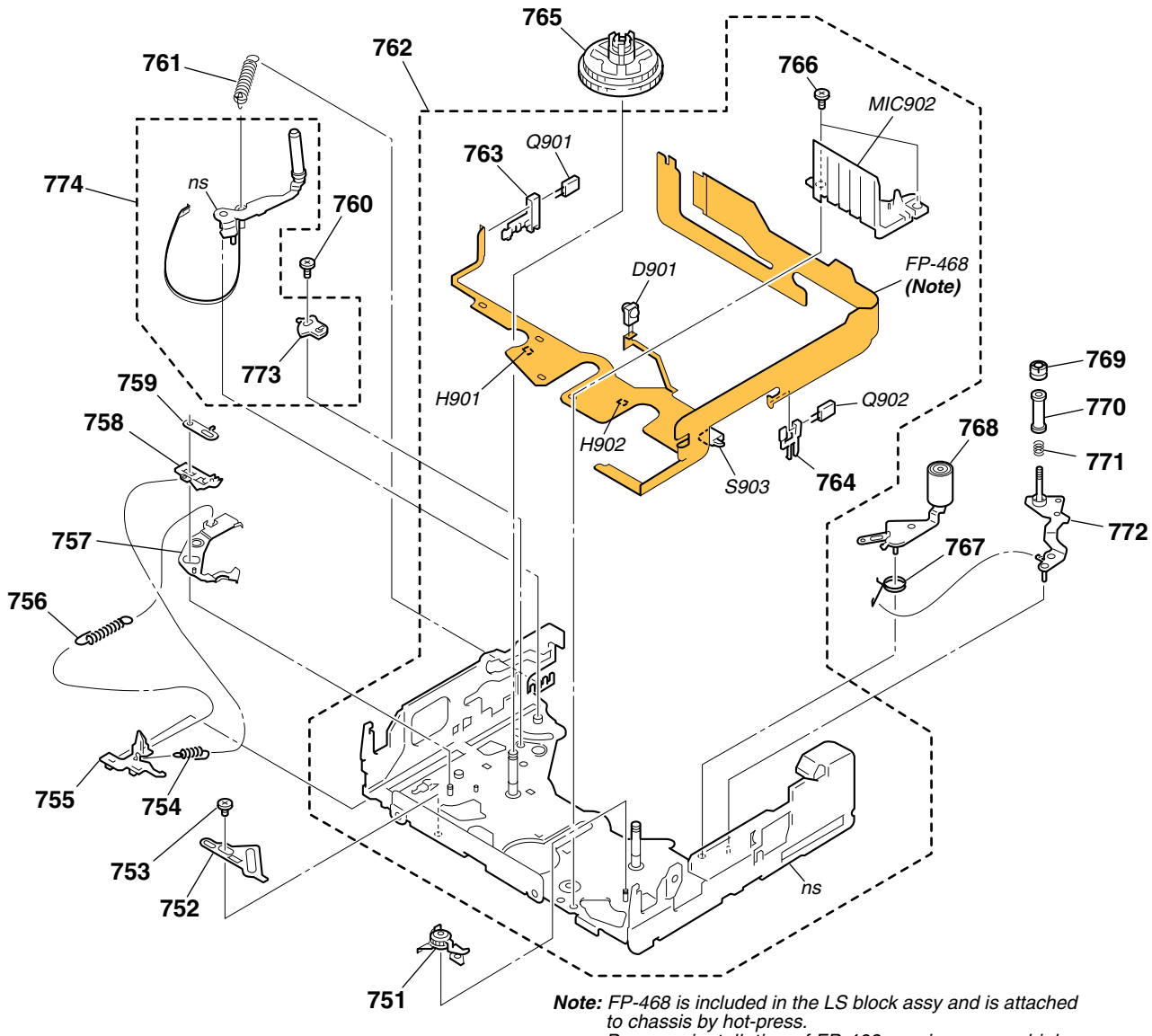


Note: *Type name and part code number of the M901 drum differ depending on models. Refer to Service Manual of the respective models.*

Ref. No.	Part No.	Description
701	X-3952-938-3	GEAR ASSY, GOOSENECK
702	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
703	3-079-206-02	SPRING (POP UP S), EXTENSION
704	X-3952-939-3	COMPARTMENT ASSY, CASSETTE
705	3-079-367-01	DAMPER, CASSETTE COMPARTMENT
706	3-079-215-02	SPRING (POP UP T), EXTENSION
707	3-703-816-15	SCREW (M1.4), SPECIAL HEAD
708	3-080-545-01	COVER, SENSOR S
709	3-079-364-01	RETAINER, LS GUIDE
710	X-3952-937-1	TABLE ASSY, T REEL
711	3-079-366-01	RELEASE, REEL LOCK
712	X-3953-257-1	PLATE ASSY, RETAINER
713	A-7095-393-A	MD (Z100) SUB ASSY
714	3-079-741-02	SCREW,DRUM FIXING
715	3-748-682-01	WASHER,T
M901	– Note –	DRUM (DEH-30A-R)(SERVICE)

5-2. LS Chassis Block Assembly

ns : not supplied



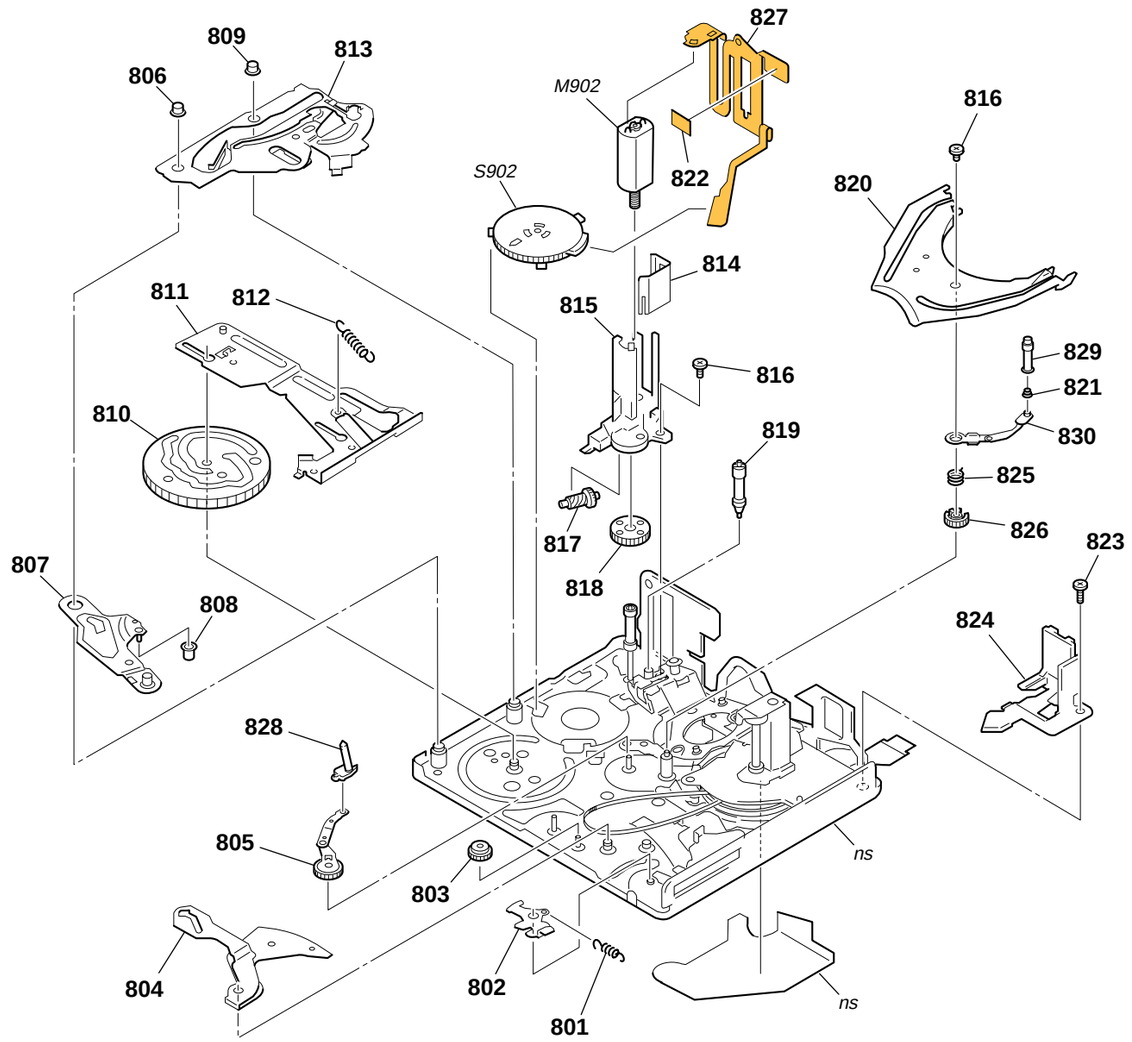
Note: *FP-468 is included in the LS block assy and is attached to chassis by hot-press.*
Because installation of FP-468 requires a very high accuracy, FP-468 is not supplied as an independent service parts.

Ref. No.	Part No.	Description
751	A-7095-402-B	BRAKE (T) BLOCK ASSY
752	3-079-241-01	PLATE, LS CAM
753	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
754	3-079-246-01	SPRING (RELEASE RACK),EXTENSION
755	3-079-248-01	POSITIONING (S), CASSETTE
756	3-079-244-01	SPRING (ULE), EXTENSION
757	X-3952-932-1	BRAKE ASSY, ULE
758	3-079-245-01	RACK (S), RELEASE
759	3-079-247-01	BRAKE (S)
760	3-059-090-11	SCREW (M1.4X2.5), SPECIAL HEAD
761	3-079-242-01	SPRING, TENSION (TENSION REGULATOR)
762	A-7095-401-A	LS BLOCK ASSY
763	3-079-267-01	HOLDER (S), SENSOR
764	3-079-268-01	HOLDER (T), SENSOR
765	X-3952-936-2	TABLE ASSY, S REEL

Ref. No.	Part No.	Description
766	3-703-816-15	SCREW (M1.4), SPECIAL HEAD
767	3-079-243-01	SPRING (PINCH RETURN), TORSION
768	X-3952-934-1	ARM ASSY, PINCH
769	3-052-062-02	NUT, TG7
770	3-079-219-02	TG7
771	3-081-591-01	SPRING, COMPRESSION (TG7)
772	X-3952-935-3	ARM ASSY, TG7
773	3-079-237-01	ADJUSTOR, BAND
774	A-7095-403-B	TG2 ARM BLOCK ASSY
D901	6-500-471-01	DIODE GL453E00000F (TAPE LED)
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)
MIC902	1-817-175-12	PIN, CONNECTOR (WITH DETECTION SWITCH)
S903	1-529-566-51	SWITCH, PUSH (1 KEY) (C.C. DOWN)
Q901	6-550-402-01	TRANSISTOR PT4850FE000F (TAPE END)
Q902	6-550-402-01	TRANSISTOR PT4850FE000F (TAPE TOP)

5-3. Mechanical Chassis Block Assembly

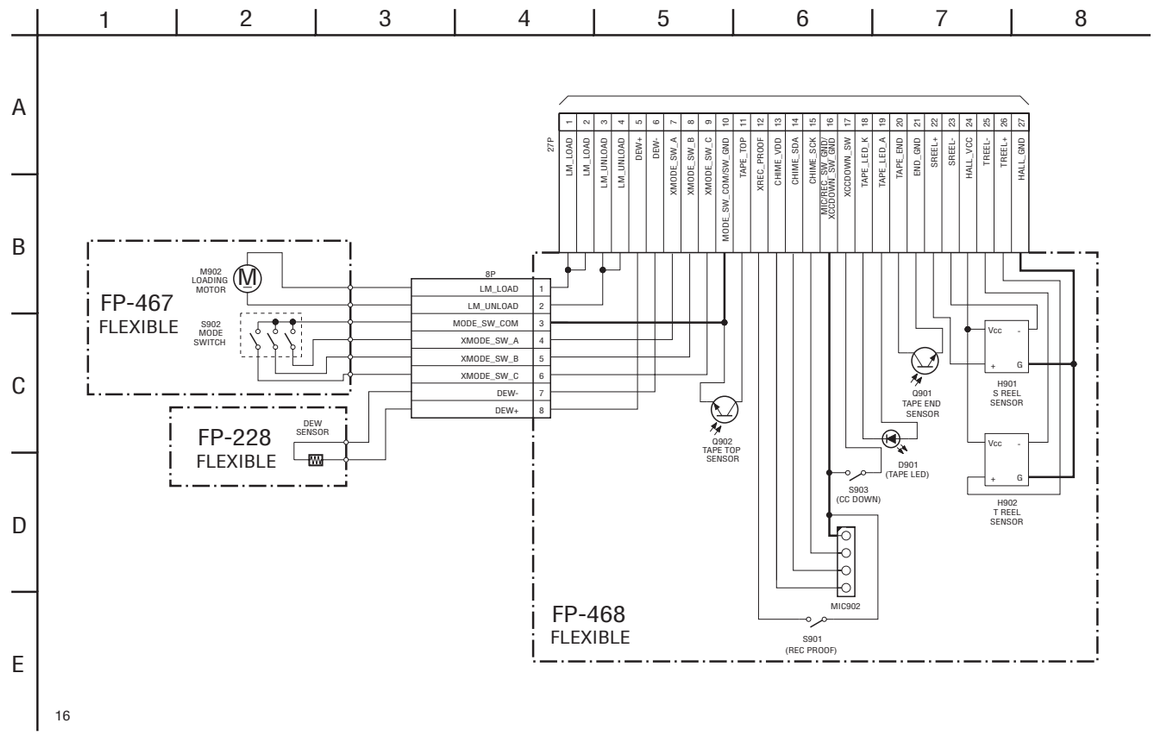
ns : not supplied



Ref. No.	Part No.	Description
801	3-079-314-01	SPRING (EJ), EXTENSION
802	3-079-327-01	ARM, EJ
803	3-079-323-02	GEAR, CONVERSION
804	3-079-324-02	ARM, GL DRIVING
805	X-3952-928-1	GL (S) ASSY
806	3-079-315-01	ROLLER (S1), LS GUIDE
807	X-3952-925-1	ARM ASSY, LS
808	3-079-320-01	ROLLER, LS
809	3-079-316-01	ROLLER (S2), LS GUIDE
810	3-079-319-01	GEAR, CAM
811	X-3952-941-1	SLIDER ASSY, M
812	3-079-321-02	SPRING (PINCH), EXTENSION
813	X-3952-940-2	PLATE ASSY, TG2 CAM
814	3-079-312-01	SHIELD, MOTOR
815	3-079-307-01	HOLDER, MOTOR
816	3-703-816-15	SCREW (M1.4), SPECIAL HEAD

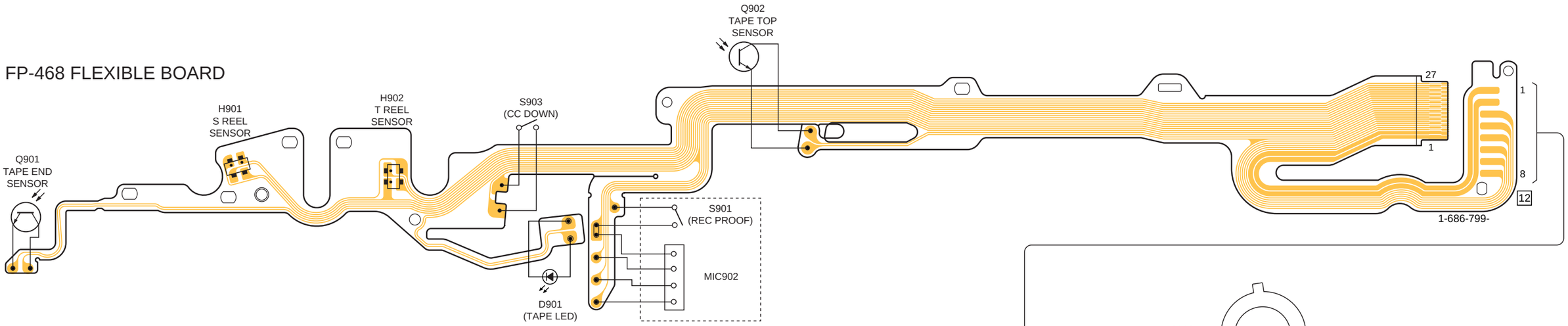
Ref. No.	Part No.	Description
817	3-079-308-01	SHAFT, WORM
818	3-079-309-01	GEAR, DECELERATION
819	X-3952-942-2	ROLLER ASSY, TG3
820	3-079-325-01	RAIL, GUIDE
821	3-079-295-02	SPRING, TG5
822	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
823	3-079-328-01	SCREW ,SPECIAL (EG GRIP)
824	3-079-326-02	SUPPORT, TG7
825	3-079-301-01	SPRING (GLT), TORSION
826	3-079-298-01	GEAR (T), GL
827	1-686-798-11	FP-467 FLEXIBLE BOARD
828	X-3952-927-2	COASTER (S) ASSY
829	X-3952-930-3	ROLLER ASSY, TG5
830	X-3952-929-3	COASTER (T) ASSY
M902	A-7095-396-A	MOTOR BLOCK ASSY, L (LOADING)
S902	1-477-679-11	ROTARY, ENCODER (SWITCH)

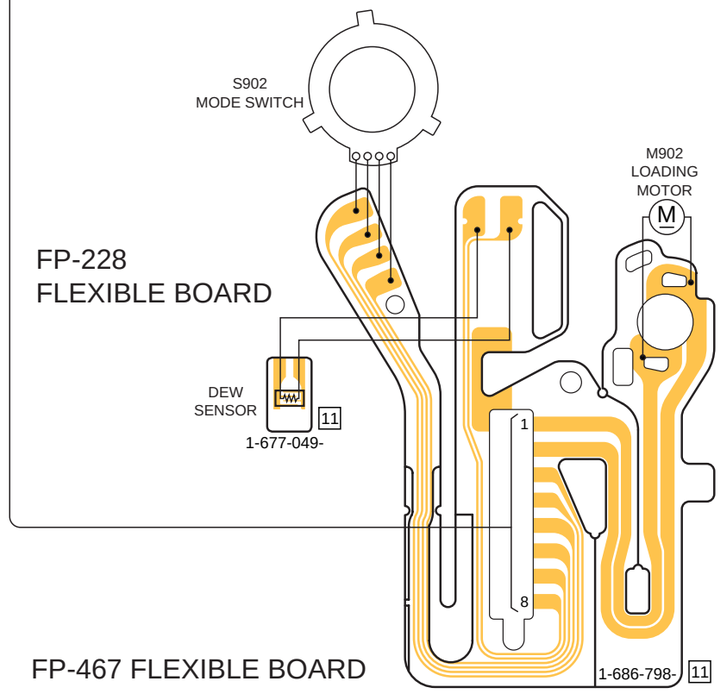
6. Schematic Diagrams



16

7. Printed Wiring Boards





2003A1600-1

Published by DI Customer Center

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.01	Official Release	—	—